

Determination of Cannabinoids in Edibles using HPLC from CTInstruments

Accurate determination of cannabinoids in edibles is important from pricing, quality assurance, and regulatory compliance point of view. We present an easy-to-use, accurate, reliable, and affordable HPLC for measuring 11 cannabinoids in a variety of samples. This application note describes analysis of cannabis edibles.

HPLC Features

- Reciprocating Pump
- Rheodyne 7725i Injector
- CTI HPLC Software
- UV/VIS Detector
- Temperature-controlled Column Compartment

HPLC Specifications

Flow Rate	0.001 - 5mL/min
Max Pressure	6,300 psi
Flow Accuracy	±1%
Flow Precision	RSD <0.1%
Qualitative Repeatability	RSD ≤0.2% (Naphthalene/ Methanol standards)
Quantitative Repeatability	RSD ≤0.5% (Naphthalene/ Methanol standards)
Wavelength Range	180 - 680nm
Spectrum Bandwidth	8nm
Wavelength Accuracy	±1nm
Wavelength Precision	Below 0.1nm
Noise	≤0.25X10 ⁻⁵ AU

HPLC Column Specifications

Column Type	C18, SS body
Dimensions	150x4.6mm
Packing	5µm particles
Guard Column	C18



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Sample Information

Sample Type	Mints
Brand	AURORA drift PEPPERMINT CHILLERS
Total THC per Unit	2 mg
Total CBD per Unit	<0.3 mg



PROCESS

1. Extraction

Extraction of cannabinoids from mints is the initial step in the analysis.

Extraction Parameters

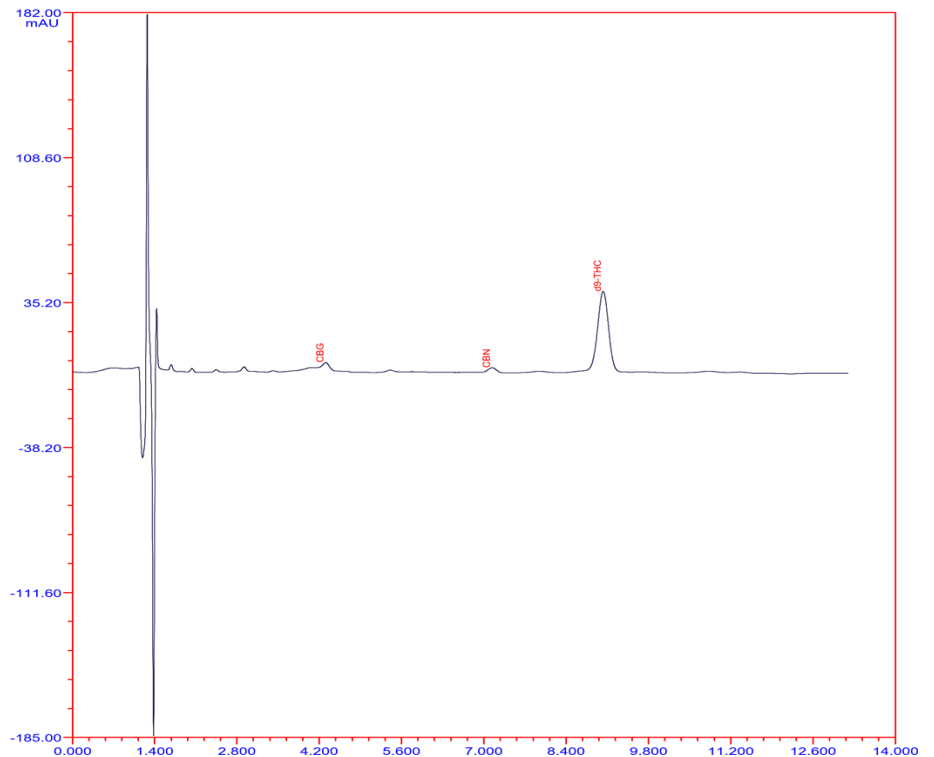
Sample Weight	600mg
Sample Preparation	sonication
Extraction Solvent	methanol
Extraction Conditions	room temperature
Dilution	in acetonitrile

2. Injection and HPLC Analysis

After the extraction is completed, diluted extract is injected into HPLC for analysis.

Chromatographic Conditions

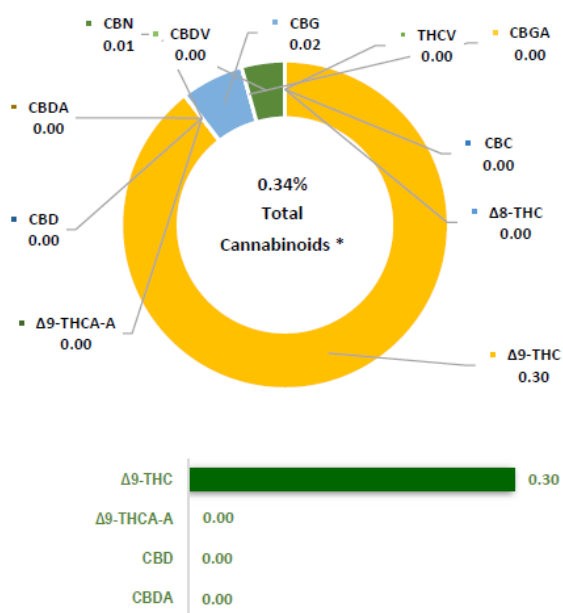
Mode	Isocratic
Temperature	30°C
Detection	UV at 220nm
Mobile Phase	Buffer:Acetonitrile
Flow Rate	1.2mL/min



3. Report Generation

After the analysis is completed, CTI HPLC software auto-processes the chromatogram, followed by export to custom lab report gen-

CANNABINOID PROFILE



Compound		Result (% w/w)	mg/gram of sample
THCV	Tetrahydrocannabivarin	NR	NR
Δ8-THC	(-)-Δ8-THC	NR	NR
Δ9-THC	(-)-Δ9-THC	0.30	3.04
Δ9-THCA-A	(-)-trans-Δ9-THC acid A	NR	NR
CBD	Cannabidiol	NR	NR
CBDA	Cannabidiolic acid	NR	NR
CBDV	Cannabidivarin	NR	NR
CBG	Cannabigerol	0.02	0.21
CBGA	Cannabigerolic acid	NR	NR
CBN	Cannabinol	0.01	0.14
CBC	(+/-) Cannabichromene	NR	NR

Total Cannabinoids*	0.34	3.39
Total Potential THC	0.30	3.04
Total Potential CBD	NR	NR
Total Potential CBG	0.02	0.21

NOTES

Results

	Manufacturer's Values	Measured Values
Total THC per Unit	2 mg	1.82 mg
Total CBD per Unit	<0.3 mg	<0.01 mg

Lower Limit of Quantification (LLOQ)

The lower limit of quantification (LLOQ) is the lowest amount of a cannabinoid in a sample that can be quantitatively determined with suitable precision and accuracy using the corresponding method and dilution rates. All values below this threshold are reported as NR - None Reported.

Compound		LLOQ (% w/w)
THCV	Tetrahydrocannabivarin	0.01
Δ8-THC	(-)-Δ8-THC	0.01
Δ9-THC	(-)-Δ9-THC	0.01
Δ9-THCA-A	(-)-trans-Δ9-THC acid A	0.01
CBD	Cannabidiol	0.01
CBDA	Cannabidiolic acid	0.01
CBDV	Cannabidivarin	0.01
CBG	Cannabigerol	0.01
CBGA	Cannabigerolic acid	0.01
CBN	Cannabinol	0.01
CBC	(+/-) Cannabichromene	0.01

Date of Quality Control	Standard	Standard Concentration (ug/mL)	Measured Concentration (ug/mL)	Delta (%)	PASS/FAIL	Notes
28-Jan-21	Benzoic acid	1002.9	1013.0	1.0%	PASS	
28-Jan-21	CBD	100.5	103.4	2.9%	PASS	