

# Determination of 11 cannabinoids in Beverages using \$14,990 HPLC from CTInstruments

Accurate determination of cannabinoids in beverages 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

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

## HPLC Column Specifications

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



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[cannabishplcanalyzer.com](http://cannabishplcanalyzer.com)

## Sample Information

Sample Type	sparkling water—269 mL
Brand	everie Lemon & Lime Sparkling Beverage 269 mL
Total THC per Unit	<0.05 mg
Total CBD per Unit	10 mg



## PROCESS

### 1. Extraction

Extraction of cannabinoids is the first step in the analysis of samples containing cannabinoids. As beverages already have cannabinoids dissolved, they are injected directly without extraction or dilution.

#### Extraction Parameters

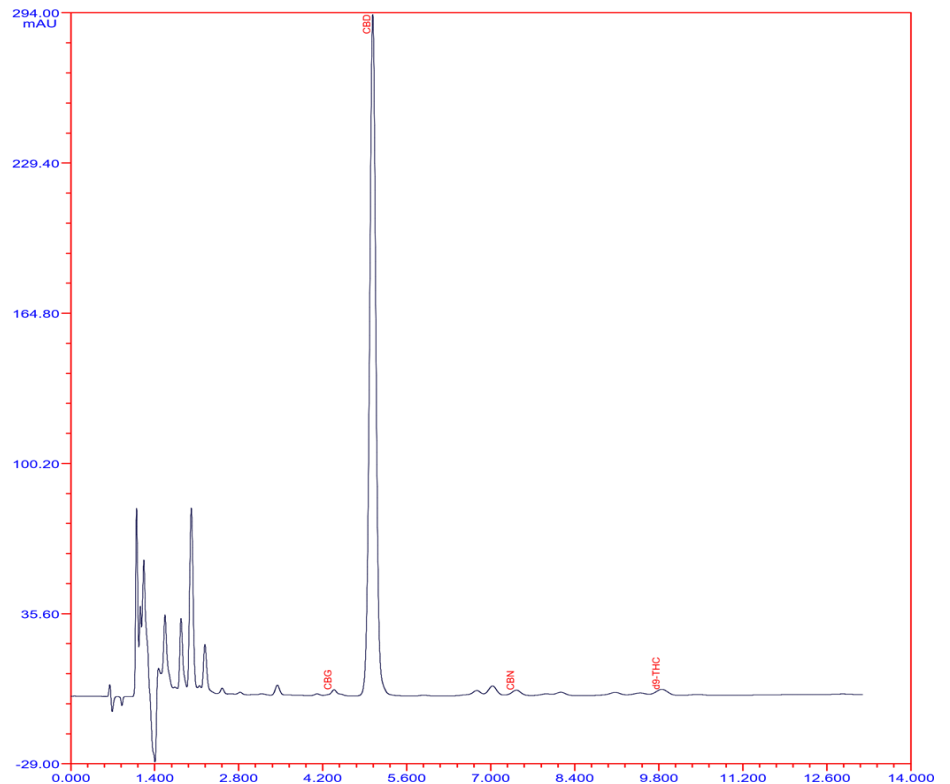
Sample Weight	20 uL
Sample Preparation	none
Extraction Solvent	none
Extraction Conditions	none
Dilution	none

### 2. Injection and HPLC Analysis

Beverage is injected into HPLC for analysis without dilution.

#### Chromatographic Conditions

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

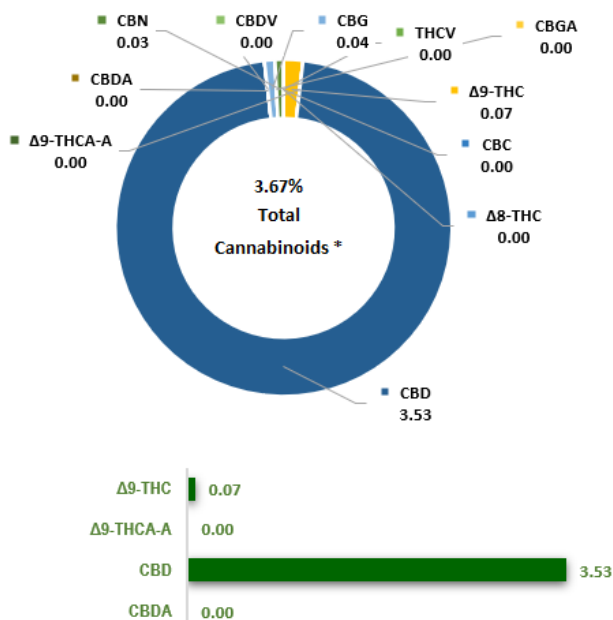


### 3. Report Generation

After the analysis is completed, CTI HPLC software auto-processes the chromatogram, followed by export to custom lab report generation program in MS Excel (highly customizable and automated report generation for ease of use).

#### CANNABINOID PROFILE

Beverage Product Volume = 269 mL



Compound		Result (% w/w)	mg/sample volume
THCV	Tetrahydrocannabivarin	0.00	0.00
Δ8-THC	(-)-Δ8-THC	0.00	0.00
Δ9-THC	(-)-Δ9-THC	0.07	0.18
Δ9-THCA-A	(-)-trans-Δ9-THC acid A	0.00	0.00
CBD	Cannabidiol	3.53	9.50
CBDA	Cannabidiolic acid	0.00	0.00
CBDV	Cannabidivarin	0.00	0.00
CBG	Cannabigerol	0.04	0.10
CBGA	Cannabigerolic acid	0.00	0.00
CBN	Cannabinol	0.03	0.08
CBC	(+/-) Cannabichromene	0.00	0.00

Compound	Result (% w/w)	mg/sample volume
Δ9-THC	0.07	
Δ9-THCA-A	0.00	
CBD	3.53	
CBDA	0.00	
<b>Total Cannabinoids *</b>	<b>3.67</b>	<b>9.86</b>
Total Potential THC	0.07	0.18
Total Potential CBD	3.53	9.50
Total Potential CBG	0.04	0.10

#### Results

	Manufacturer's Values	Measured Values
<b>Total THC per Unit</b>	<0.05 mg	0.18 mg
<b>Total CBD per Unit</b>	10 mg	9.50 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

#### Instrument Calibration & Quality Control

Date of Quality Control	Standard	Standard Concentration (ug/mL)	Measured Concentration (ug/mL)	Delta (%)	PASS/FAIL	Notes
4-Apr-21	Benzoic acid	1002.9	1007.0	0.4%	PASS	
4-Apr-21	CBD	100.5	101.3	0.8%	PASS	