

SAMPLE NAME: R&R Organic Full Spectrum 2500mg Tincture - Unflavored - Organic
 Infused, Colorado Infused

CULTIVATOR / MANUFACTURER

Business Name:
License Number:
Address:

DISTRIBUTOR / TESTED FOR

Business Name: R&R CBD
License Number:
Address:


SAMPLE DETAIL

Batch Number: Lot: 4404
Sample ID: 230810M026
Date of Sampling: 08/10/2023
Time of Sampling: 11:55 a.m.
Sampler Name:
Sampler Company:

Date Collected: 08/10/2023
Date Received: 08/10/2023
Batch Size:
Sample Size: 1.0 units
Unit Mass: 30 milliliters per Unit
Serving Size: 1 milliliters per Serving



Scan QR code to verify authenticity of results.

CANNABINOID ANALYSIS - SUMMARY

Total THC: 74.370 mg/unit

Total CBD: 2721.810 mg/unit

Sum of Cannabinoids: 2982.330 mg/unit

Total Cannabinoids: 2978.250 mg/unit

Total THC/CBD is calculated using the following formulas to take into account the loss of a carboxyl group during the decarboxylation step:
 Total THC = $\Delta^9\text{-THC} + (\text{THCa} \cdot 0.877)$
 Total CBD = $\text{CBD} + (\text{CBDa} \cdot 0.877)$
 Sum of Cannabinoids = $\Delta^9\text{-THC} + \text{THCa} + \text{CBD} + \text{CBDa} + \text{CBG} + \text{CBGa} + \text{THCV} + \text{THCVa} + \text{CBC} + \text{CBCa} + \text{CBDV} + \text{CBDVa} + \Delta^8\text{-THC} + \text{CBL} + \text{CBN}$
 Total Cannabinoids = $(\Delta^9\text{-THC} + 0.877 \cdot \text{THCa}) + (\text{CBD} + 0.877 \cdot \text{CBDa}) + (\text{CBG} + 0.877 \cdot \text{CBGa}) + (\text{THCV} + 0.877 \cdot \text{THCVa}) + (\text{CBC} + 0.877 \cdot \text{CBCa}) + (\text{CBDV} + 0.877 \cdot \text{CBDVa}) + \Delta^8\text{-THC} + \text{CBL} + \text{CBN}$

Density: 0.9554 g/mL

TERPENOID ANALYSIS - SUMMARY

39 TESTED, TOP 3 HIGHLIGHTED

Total Terpenoids: 0.0544%

● **α -Bisabolol 0.283 mg/g**
● **Guaiol 0.107 mg/g**
● **β -Caryophyllene 0.106 mg/g**

SAFETY ANALYSIS - SUMMARY

Pesticides: ✔ **PASS**

Mycotoxins: ✔ **PASS**

Residual Solvents: ✔ **PASS**

Heavy Metals: ✔ **PASS**

Microbiology (PCR): ✔ **PASS**

Microbiology (Plating): ✔ **PASS**

These results relate only to the sample included on this report.
 This report shall not be reproduced, except in full, without written approval of the laboratory.

Sample Certification: 6 CCR 1010-21 Colorado Wholesale Food, Industrial Hemp, and Shellfish Regulations; where applicable

Decision Rule: Statements of conformity (e.g. Pass/Fail) to specifications are made in this report without taking measurement uncertainty into account. Where statements of conformity are made in this report, the following decision rules are applied: PASS - Results within limits/specifications, FAIL - Results exceed limits/specifications.

References: limit of detection (LOD), limit of quantification (LOQ), not detected (ND), not tested (NT), too numerous to count >250 cfu/plate (TNTC), colony-forming unit (cfu)


 Approved by: Josh Wurzer
 Job Title: Chief Compliance Officer
 Date: 09/21/2023

Amendment to Certificate of Analysis 230810M026-003



Cannabinoid Analysis

Tested by high-performance liquid chromatography with diode-array detection (HPLC-DAD).

Method: QSP 1157 - Analysis of Cannabinoids by HPLC-DAD

TOTAL THC: 74.370 mg/unit

Total THC (Δ^9 -THC+0.877*THCa)

TOTAL CBD: 2721.810 mg/unit

Total CBD (CBD+0.877*CBDA)

TOTAL CANNABINOIDS: 2978.250 mg/unit

Total Cannabinoids (Total THC) + (Total CBD) + (Total CBG) + (Total THCV) + (Total CBC) + (Total CBDV) + Δ^8 -THC + CBL + CBN

TOTAL CBG: 54.000 mg/unit

Total CBG (CBG+0.877*CBGa)

TOTAL THCV: ND

Total THCV (THCV+0.877*THCVa)

TOTAL CBC: 73.080 mg/unit

Total CBC (CBC+0.877*CBCa)

TOTAL CBDV: 16.560 mg/unit

Total CBDV (CBDV+0.877*CBDVa)

CANNABINOID TEST RESULTS - 08/13/2023

COMPOUND	LOD/LOQ (mg/mL)	MEASUREMENT UNCERTAINTY (mg/mL)	RESULT (mg/mL)	RESULT (%)
CBD	0.004 / 0.011	±3.3489	89.782	9.3973
Δ^9 -THC	0.002 / 0.014	±0.1361	2.479	0.2595
CBC	0.003 / 0.010	±0.0774	2.404	0.2516
CBG	0.002 / 0.006	±0.0873	1.800	0.1884
CBN	0.001 / 0.007	±0.0317	1.105	0.1157
CBDA	0.001 / 0.026	±0.0306	1.077	0.1127
CBDV	0.002 / 0.012	±0.0225	0.552	0.0578
CBL	0.003 / 0.010	±0.0065	0.176	0.0184
CBCa	0.001 / 0.015	±0.0014	0.036	0.0038
Δ^8 -THC	0.01 / 0.02	N/A	ND	ND
THCa	0.001 / 0.005	N/A	ND	ND
THCV	0.002 / 0.012	N/A	ND	ND
THCVa	0.002 / 0.019	N/A	ND	ND
CBDVa	0.001 / 0.018	N/A	ND	ND
CBGa	0.002 / 0.007	N/A	ND	ND
Total THC		±0.1361	2.479	0.2595
SUM OF CANNABINOIDS			99.411 mg/mL	10.4052%

Unit Mass: 30 milliliters per Unit / Serving Size: 1 milliliters per Serving

Δ^9 -THC per Unit	74.370 mg/unit
Δ^9 -THC per Serving	2.479 mg/serving
Total THC per Unit	74.370 mg/unit
Total THC per Serving	2.479 mg/serving
CBD per Unit	2693.460 mg/unit
CBD per Serving	89.782 mg/serving
Total CBD per Unit	2721.810 mg/unit
Total CBD per Serving	90.727 mg/serving
Sum of Cannabinoids per Unit	2982.330 mg/unit
Sum of Cannabinoids per Serving	99.411 mg/serving
Total Cannabinoids per Unit	2978.250 mg/unit
Total Cannabinoids per Serving	99.275 mg/serving

DENSITY TEST RESULT

0.9554 g/mL

Tested 08/13/2023

Method: QSP 7870 - Sample Preparation



Terpenoid Analysis

Terpene analysis utilizing gas chromatography-flame ionization detection (GC-FID).

Method: QSP 1192 - Analysis of Terpenoids by GC-FID

1 α -Bisabolol

A sesquiterpene alcohol with a fragrance that can be described as floral, peppery, sweet and clean. Found in chamomile, figwort, yarrow, skullcaps, lavender, ironwort, germander...etc.

2 Guaiol

A sesquiterpene alcohol with a fragrance that can be described as floral, piney, herbal and woody. Found in guaiacum, cypress pine, ginseng, melaleuca, goatweed, incense grass...etc.

3 β -Caryophyllene

A sesquiterpene with a fragrance that can be described as spicy, woody, dry, dusty and mildly sweet. It was one of the first organic compounds to fully synthesized in a laboratory and plays a role in the endocannabinoid system as it is a functional CB₂ receptor agonist. Found in black pepper, clove, hops, rosemary, black-jack, perilla, spicebush, Indian pennywort, celery, frankincense, vitex, parsley, marigold, tamarind...etc.

TERPENOID TEST RESULTS - 08/12/2023

COMPOUND	LOD/LOQ (mg/g)	MEASUREMENT UNCERTAINTY (mg/g)	RESULT (mg/g)	RESULT (%)
α -Bisabolol	0.008 / 0.026	± 0.0117	0.283	0.0283
Guaiol	0.009 / 0.030	± 0.0039	0.107	0.0107
β -Caryophyllene	0.004 / 0.012	± 0.0029	0.106	0.0106
α -Humulene	0.009 / 0.029	± 0.0012	0.048	0.0048
Nerolidol	0.006 / 0.019	N/A	<LOQ	<LOQ
α -Pinene	0.005 / 0.017	N/A	ND	ND
Camphene	0.005 / 0.015	N/A	ND	ND
Sabinene	0.004 / 0.014	N/A	ND	ND
β -Pinene	0.004 / 0.014	N/A	ND	ND
Myrcene	0.008 / 0.025	N/A	ND	ND
α -Phellandrene	0.006 / 0.020	N/A	ND	ND
Δ^3 -Carene	0.005 / 0.018	N/A	ND	ND
α -Terpinene	0.005 / 0.017	N/A	ND	ND
p-Cymene	0.005 / 0.016	N/A	ND	ND
Limonene	0.005 / 0.016	N/A	ND	ND
Eucalyptol	0.006 / 0.018	N/A	ND	ND
β -Ocimene	0.006 / 0.020	N/A	ND	ND
γ -Terpinene	0.006 / 0.018	N/A	ND	ND
Sabinene Hydrate	0.006 / 0.022	N/A	ND	ND
Fenchone	0.009 / 0.028	N/A	ND	ND
Terpinolene	0.008 / 0.026	N/A	ND	ND
Linalool	0.009 / 0.032	N/A	ND	ND
Fenchol	0.010 / 0.034	N/A	ND	ND
Isopulegol	0.005 / 0.016	N/A	ND	ND
Camphor	0.006 / 0.019	N/A	ND	ND
Isoborneol	0.004 / 0.012	N/A	ND	ND
Borneol	0.005 / 0.016	N/A	ND	ND
Menthol	0.008 / 0.025	N/A	ND	ND
Terpineol	0.009 / 0.031	N/A	ND	ND
Nerol	0.003 / 0.011	N/A	ND	ND
Citronellol	0.003 / 0.010	N/A	ND	ND
Pulegone	0.003 / 0.011	N/A	ND	ND
Geraniol	0.002 / 0.007	N/A	ND	ND
Geranyl Acetate	0.004 / 0.014	N/A	ND	ND
α -Cedrene	0.005 / 0.016	N/A	ND	ND
trans- β -Farnesene	0.008 / 0.025	N/A	ND	ND
Valencene	0.009 / 0.030	N/A	ND	ND
Caryophyllene Oxide	0.010 / 0.033	N/A	ND	ND
Cedrol	0.008 / 0.027	N/A	ND	ND
TOTAL TERPENOIDS			0.544 mg/g	0.0544%



Pesticide Analysis

PESTICIDE TEST RESULTS - 08/15/2023 ✔ PASS

Pesticide and plant growth regulator analysis utilizing high-performance liquid chromatography-mass spectrometry (HPLC-MS) or gas chromatography-mass spectrometry (GC-MS).

*GC-MS utilized where indicated.

Method: QSP 1212 - Analysis of Pesticides and Mycotoxins by LC-MS or QSP 1213 - Analysis of Pesticides by GC-MS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Abamectin	0.032 / 0.097		N/A	ND	
Acephate	0.006 / 0.018		N/A	ND	
Acequinocyl	0.009 / 0.027		N/A	ND	
Acetamiprid	0.016 / 0.049		N/A	ND	
Aldicarb	0.030 / 0.090		N/A	ND	
Allethrin	0.030 / 0.092		N/A	ND	
Atrazine	0.006 / 0.019		N/A	ND	
Azadirachtin	0.082 / 0.248		N/A	ND	
Azoxystrobin	0.003 / 0.009		N/A	ND	
Benzovindiflupyr	0.003 / 0.009		N/A	ND	
Bifenazate	0.003 / 0.009		N/A	ND	
Bifenthrin	0.021 / 0.064		N/A	ND	
Boscalid	0.003 / 0.009		N/A	ND	
Buprofezin	0.006 / 0.019		N/A	ND	
Carbaryl	0.007 / 0.020		N/A	ND	
Carbofuran	0.003 / 0.008		N/A	ND	
Chlorantraniliprole	0.006 / 0.018		N/A	ND	
Chlorfenapyr*	0.005 / 0.015		N/A	ND	
Chlorpyrifos	0.013 / 0.039		N/A	ND	
Clofentezine	0.003 / 0.009		N/A	ND	
Clothianidin	0.008 / 0.025		N/A	ND	
Coumaphos	0.003 / 0.010		N/A	ND	
Cyantraniliprole	0.003 / 0.010		N/A	ND	
Cyfluthrin	0.052 / 0.159		N/A	ND	
Cypermethrin	0.051 / 0.153		N/A	ND	
Cyprodinil	0.003 / 0.008		N/A	ND	
Daminozide	0.026 / 0.077		N/A	ND	
Deltamethrin	0.059 / 0.180		N/A	ND	
Diazinon	0.006 / 0.017		N/A	ND	
Dichlorvos (DDVP)	0.012 / 0.038		N/A	ND	
Dimethoate	0.003 / 0.009		N/A	ND	
Dimethomorph	0.016 / 0.050		N/A	ND	
Dinotefuran	0.010 / 0.030		N/A	ND	
Diuron	0.013 / 0.040		N/A	ND	
Dodemorph	0.012 / 0.035		N/A	ND	
Endosulfan sulfate	0.016 / 0.048		N/A	ND	
Endosulfan-α*	0.004 / 0.014		N/A	ND	
Endosulfan-β*	0.006 / 0.019		N/A	ND	
Ethoprophos	0.003 / 0.009		N/A	ND	
Etofenprox	0.014 / 0.042		N/A	ND	
Etoxazole	0.007 / 0.020		N/A	ND	

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Pesticide Analysis *Continued*

PESTICIDE TEST RESULTS - 08/15/2023 *continued* ✔ **PASS**

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Etridiazole*	0.002 / 0.005		N/A	ND	
Fenhexamid	0.003 / 0.008		N/A	ND	
Fenoxycarb	0.003 / 0.010		N/A	ND	
Fenpyroximate	0.007 / 0.020		N/A	ND	
Fensulfothion	0.003 / 0.010		N/A	ND	
Fenthion	0.003 / 0.010		N/A	ND	
Fenvalerate	0.033 / 0.099		N/A	ND	
Fipronil	0.003 / 0.010		N/A	ND	
Flonicamid	0.007 / 0.022		N/A	ND	
Fludioxonil	0.003 / 0.010		N/A	ND	
Fluopyram	0.003 / 0.009		N/A	ND	
Hexythiazox	0.003 / 0.010		N/A	ND	
Imazalil	0.003 / 0.009		N/A	ND	
Imidacloprid	0.003 / 0.010		N/A	ND	
Iprodione	0.077 / 0.233		N/A	ND	
Kinoprene	0.077 / 0.233		N/A	ND	
Kresoxim-methyl	0.006 / 0.019		N/A	ND	
λ-Cyhalothrin	0.068 / 0.206		N/A	ND	
Malathion	0.003 / 0.009		N/A	ND	
Metalaxyl	0.003 / 0.010		N/A	ND	
Methiocarb	0.003 / 0.008		N/A	ND	
Methomyl	0.008 / 0.025		N/A	ND	
Methoprene	0.172 / 0.521		N/A	ND	
Mevinphos	0.008 / 0.024		N/A	ND	
MGK-264	0.015 / 0.047		N/A	ND	
Myclobutanil	0.003 / 0.009		N/A	ND	
Naled	0.021 / 0.064		N/A	ND	
Novaluron	0.002 / 0.005		N/A	ND	
Oxamyl	0.017 / 0.051		N/A	ND	
Paclobutrazol	0.003 / 0.010		N/A	ND	
Parathion-methyl	0.016 / 0.050		N/A	ND	
Pentachloronitrobenzene*	0.004 / 0.012		N/A	ND	
Permethrin	0.056 / 0.168		N/A	ND	
Phenothrin	0.016 / 0.047		N/A	ND	
Phosmet	0.007 / 0.020		N/A	ND	
Piperonyl Butoxide	0.010 / 0.029		N/A	ND	
Pirimicarb	0.003 / 0.009		N/A	ND	
Prallethrin	0.015 / 0.046		N/A	ND	
Propiconazole	0.027 / 0.080		N/A	ND	
Propoxur	0.003 / 0.008		N/A	ND	
Pyraclostrobin	0.003 / 0.010		N/A	ND	

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Pesticide Analysis *Continued*

PESTICIDE TEST RESULTS - 08/15/2023 *continued* ✔ PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Pyrethrins	0.016 / 0.049		N/A	ND	
Pyridaben	0.005 / 0.017		N/A	ND	
Pyriproxyfen	0.003 / 0.009		N/A	ND	
Resmethrin	0.013 / 0.039		N/A	ND	
Spinetoram	0.003 / 0.010		N/A	ND	
Spinosad	0.003 / 0.010		N/A	ND	
Spirodiclofen	0.031 / 0.093		N/A	ND	
Spiromesifen	0.016 / 0.050		N/A	ND	
Spirotetramat	0.003 / 0.010		N/A	ND	
Spiroxamine	0.020 / 0.062		N/A	ND	
Tebuconazole	0.003 / 0.010		N/A	ND	
Tebufenozide	0.003 / 0.008		N/A	ND	
Teflubenzuron	0.007 / 0.022		N/A	ND	
Tetrachlorvinphos	0.003 / 0.008		N/A	ND	
Tetramethrin	0.021 / 0.063		N/A	ND	
Thiabendazole	0.006 / 0.020		N/A	ND	
Thiacloprid	0.003 / 0.009		N/A	ND	
Thiamethoxam	0.003 / 0.010		N/A	ND	
Thiophanate-methyl	0.013 / 0.040		N/A	ND	
Trifloxystrobin	0.003 / 0.009	0.01	N/A	<LOQ	PASS



Mycotoxin Analysis

MYCOTOXIN TEST RESULTS - 08/15/2023 ✔ PASS

Mycotoxin analysis utilizing high-performance liquid chromatography-mass spectrometry (HPLC-MS).

Method: QSP 1212 - Analysis of Pesticides and Mycotoxins by LC-MS

COMPOUND	LOD/LOQ (µg/kg)	ACTION LIMIT (µg/kg)	MEASUREMENT UNCERTAINTY (µg/kg)	RESULT (µg/kg)	RESULT
Aflatoxin B1	1.6 / 5.0	5	N/A	ND	PASS
Aflatoxin B2	1.4 / 4.1		N/A	ND	
Aflatoxin G1	1.6 / 4.9		N/A	ND	
Aflatoxin G2	1.6 / 5.0		N/A	ND	
Total Aflatoxin		20		ND	PASS
Ochratoxin A	1.6 / 5.0	5	N/A	ND	PASS



Residual Solvents Analysis

Residual Solvent analysis utilizing gas chromatography-mass spectrometry (GC-MS).

Method: QSP 1204 - Analysis of Residual Solvents by GC-MS

Total Butanes = n-Butane + 2-Methylpropane (Isobutane)

Total Heptanes = 2,2-Dimethylpentane (Neoheptane) + 2,3-Dimethylpentane + 2,4-Dimethylpentane + 3,3-Dimethylpentane + 2,2,3-Trimethylbutane (Triptane) + 2-Methylhexane (Isoheptane) + 3-Methylhexane + 3-Ethylpentane + n-Heptane

Total Xylenes = 1,2-Dimethylbenzene (o-Xylene) + 1,3-Dimethylbenzene (m-Xylene) / 1,4-Dimethylbenzene (p-Xylene)

RESIDUAL SOLVENTS TEST RESULTS - 08/14/2023

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Propane	0.234 / 0.781		N/A	ND	
2-Methylpropane (Isobutane)	0.052 / 0.173		N/A	ND	
n-Butane	0.019 / 0.063		N/A	ND	
Total Butanes				ND	
n-Pentane	0.310 / 1.033		N/A	ND	
n-Hexane	0.110 / 0.366		N/A	ND	
2,2-Dimethylpentane (Neoheptane)	0.493 / 1.642		N/A	ND	
2,3-Dimethylpentane	1.009 / 3.365		N/A	ND	
2,4-Dimethylpentane	0.737 / 2.458		N/A	ND	
3,3-Dimethylpentane	0.198 / 0.660		N/A	ND	
2,2,3-Trimethylbutane (Triptane)	0.521 / 1.738		N/A	ND	
2-Methylhexane (Isoheptane)	0.610 / 2.034		N/A	ND	
3-Methylhexane	0.235 / 0.785		N/A	ND	
3-Ethylpentane	0.304 / 1.012		N/A	ND	
n-Heptane	13.12 / 43.72		N/A	ND	
Total Heptanes				ND	
Benzene	0.089 / 0.295		N/A	ND	
Toluene	0.115 / 0.382		N/A	ND	
1,3-Dimethylbenzene / 1,4-Dimethylbenzene	0.451 / 1.502		N/A	ND	
1,2-Dimethylbenzene (o-Xylene)	0.387 / 1.289		N/A	ND	
Total Xylenes				ND	
Methanol	53.92 / 163.4		N/A	ND	
Ethanol	8.984 / 27.23	1000	N/A	<LOQ	PASS
2-Propanol (Isopropyl Alcohol)	8.421 / 25.52		N/A	ND	
Acetone	10.59 / 32.08		N/A	ND	
Ethyl Acetate	1.123 / 3.745		N/A	ND	

Heavy Metals Analysis

Heavy metal analysis utilizing inductively coupled plasma-mass spectrometry (ICP-MS).

Method: QSP 1160 - Analysis of Heavy Metals by ICP-MS

HEAVY METALS TEST RESULTS - 08/13/2023

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Arsenic	0.02 / 0.1	1.5	N/A	ND	PASS
Cadmium	0.02 / 0.05	0.5	N/A	ND	PASS
Lead	0.04 / 0.1	0.5	N/A	ND	PASS
Mercury	0.002 / 0.01	1.5	N/A	ND	PASS



Microbiology Analysis

PCR AND PLATING

Analysis conducted by polymerase chain reaction (PCR) and fluorescence detection of microbiological contaminants.

Method: QSP 1221 - Analysis of Microbiological Contaminants

Analysis conducted by 3M™ Petrifilm™ and plate counts of microbiological contaminants.

Method: QSP 6794 - Plating with 3M™ Petrifilm™

MICROBIOLOGY TEST RESULTS (PCR) - 08/15/2023 ✔ PASS

COMPOUND	ACTION LIMIT	RESULT	RESULT
Shiga toxin-producing <i>Escherichia coli</i>	Not Detected in 25g	ND	PASS
<i>Salmonella</i> spp.	Not Detected in 25g	ND	PASS

MICROBIOLOGY TEST RESULTS (PLATING) - 08/15/2023 ✔ PASS

COMPOUND	ACTION LIMIT (cfu/g)	RESULT (cfu/g)	RESULT
Total Aerobic Bacteria	10000	ND	PASS
Total Yeast and Mold	1000	ND	PASS
Coliforms	100	ND	PASS

NOTES

Reason for Amendment: Photo Update, Order Detail Information
 Change CoA Amended Update: Order Details