



20mg CBD w/ 5mg CBN  
Sample Matrix:  
CBD/HEMP  
Edibles  
(Ingestion)



License No. 800025015  
FL License # CMTL-0003  
CLIA No. 10D1094068

## Certificate of Analysis

Compliance Test

**Root Bioscience**  
951 Aviation Pkwy  
Morrisville, NC 27560

Batch # 211020-G1  
Batch Date: 2021-11-04  
Extracted From: Hemp Biomass

Sampling Method: MSP 7.3.1  
Test Reg State: Florida

Production Facility: Root Bioscience NC, LLC  
Production Date: 2021-11-04

Order # ROO211104-010001  
Order Date: 2021-11-04  
Sample # AACD348

Sampling Date: 2021-11-09  
Lab Batch Date: 2021-11-09  
Completion Date: 2021-11-12

Initial Gross Weight: 15.017 g  
Net Weight: 13.317 g

Number of Units: 1  
Net Weight per Unit: 3329.250 mg



Product Image

- Potency Tested**
- Heavy Metals Passed**
- Mycotoxins Passed**
- Pesticides Passed**
- Residual Solvents Passed**
- Pathogenic Microbiology Passed**
- Listeria Monocytogenes Passed**

**Potency - 11**  
Specimen Weight: 1503.500 mg

**Tested**  
(HPLC/LCMS)

**Potency Summary**

Pieces For Panel: 4

Analyte	Dilution (1:n)	LOD (%)	LOQ (%)	Result (mg/g)	(%)
CBD	1000.000	0.000054	0.001	6.500	0.650
CBN	1000.000	0.000014	0.001	1.700	0.170
CBC	1000.000	0.000018	0.001	0.200	0.020
Delta-9 THC	1000.000	0.000013	0.001	0.200	0.020
CBG	1000.000	0.000248	0.001	0.100	0.010
THCV	1000.000	0.000007	0.001	<LOQ	<LOQ
Delta-8 THC	1000.000	0.000026	0.001	<LOQ	<LOQ
CBGA	1000.000	0.00008	0.001	<LOQ	<LOQ
CBDV	1000.000	0.000065	0.001	<LOQ	<LOQ
CBDA	1000.000	0.00001	0.001	<LOQ	<LOQ
THCA-A	1000.000	0.000032	0.001	<LOQ	<LOQ

<b>Total THC</b>	0.020%	0.666mg	<b>Total CBD</b>	0.650%	21.640mg
<b>Total CBG</b>	0.010%	0.333mg	<b>Total CBN</b>	0.170%	5.660mg
<b>Other Cannabinoids</b>	0.020%	0.666mg	<b>Total Cannabinoids</b>	0.870%	28.964mg

Xueli Gao  
Ph.D., DABT  
Lab Toxicologist

Aixia Sun  
D.H.Sc., M.Sc., B.Sc., MT (AAB)  
Lab Director/Principal Scientist



Definitions and Abbreviations used in this report: \*Total CBD = CBD + (CBD-A \* 0.877), \*Total CBDV = CBDV + (CBDVA \* 0.87), \*Total THC = THCA-A \* 0.877 + Delta 9 THC, \*Total THCV = THCV + (THCVA \* 0.87), \*CBG Total = (CBGA \* 0.877) + CBG, \*CBN Total = (CBNA \* 0.877) + CBN, \*Total CBC = CBC + (CBCA \* 0.877), \*Other Cannabinoids Total = Total Cannabinoids - All the listed cannabinoids on the summary section, \*Total Detected Cannabinoids = Delta8-THC + Total CBN + CBT + Delta8-THCV + Total CBG + Total CBD + Total THCV + CBL + Total THC + Total CBC + Total CBDV + Delta10-THC, \*Total THC-O-Acetate = Delta 8 THC-O-Acetate + THC-O-Acetate, \*Analyte Details above show the Dry Weight Concentrations unless specified as 12% moisture concentration. (mg/ml) = Milligrams per Milliliter, LOQ = Limit of Quantitation, LOD = Limit of Detection, Dilution = Dilution Factor (ppb) = Parts per Billion, (%) = Percent, (cfu/g) = Colony Forming Unit per Gram (cfu/g) = Colony Forming Unit per Gram, LOD = Limit of Detection, (µg/g) = Microgram per Gram (ppm) = Parts per Million, (ppm) = (µg/g), (aw) = aw (area ratio) = Area Ratio, (mg/Kg) = Milligram per Kilogram, \*Measurement of Uncertainty = +/- 10%



This report shall not be reproduced, without written approval, from ACS Laboratory. The results of this report relate only to the material or product analyzed. Test results are confidential unless explicitly waived otherwise. Accredited by a third-party accrediting body as a competent testing laboratory pursuant to ISO/IEC 17025 of the International Organization for Standardization.



License No. 800025015  
FL License # CMTL-0003  
CLIA No. 10D1094068

## Certificate of Analysis

Compliance Test

<b>Root Bioscience</b> 951 Aviation Pkwy Morrisville, NC 27560	Batch # 211020-G1 Batch Date: 2021-11-04 Extracted From: Hemp Biomass	Sampling Method: MSP 7.3.1 Test Reg State: Florida	Production Facility: Root Bioscience NC, LLC Production Date: 2021-11-04
--	---	---	---

Order # ROO211104-010001 Order Date: 2021-11-04 Sample # AACD348	Sampling Date: 2021-11-09 Lab Batch Date: 2021-11-09 Completion Date: 2021-11-12	Initial Gross Weight: 15.017 g Net Weight: 13.317 g	Number of Units: 1 Net Weight per Unit: 3329.250 mg
--	--	--	--

### H Heavy Metals Passed (ICP-MS)

Specimen Weight: 254.600 mg

Dilution Factor: 2.000

Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)	Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)
Arsenic (As)	100	1500	<LOQ	Cadmium (Cd)	100	500	<LOQ
Lead (Pb)	100	500	<LOQ	Mercury (Hg)	100	3000	<LOQ

### Mycotoxins Passed (LCMS)

Specimen Weight: 179.390 mg

Dilution Factor: 8.362

Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)	Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)
Aflatoxin B1	6	20	<LOQ	Aflatoxin B2	6	20	<LOQ
Aflatoxin G1	6	20	<LOQ	Aflatoxin G2	6	20	<LOQ
Ochratoxin A	12	20	<LOQ				

*Xueli Gao*  
Xueli Gao  
Ph.D., DABT  
Lab Toxicologist

*Aixia Sun*  
Aixia Sun  
D.H.Sc., M.Sc., B.Sc., MT (AAB)  
Lab Director/Principal Scientist



Definitions and Abbreviations used in this report: \*Total CBD = CBD + (CBD-A \* 0.877), \*Total CBDV = CBDV + (CBDVA \* 0.87), \*Total THC = THCA-A \* 0.877 + Delta 9 THC, \*Total THCV = THCV + (THCVA \* 0.87), \*CBG Total = (CBGA \* 0.877) + CBG, \*CBN Total = (CBNA \* 0.877) + CBN, \*Total CBC = CBC + (CBCA \* 0.877), \*Other Cannabinoids Total = Total Cannabinoids - All the listed cannabinoids on the summary section, \*Total Detected Cannabinoids = Delta8-THC + Total CBN + CBT + Delta8-THCV + Total CBG + Total CBD + Total THCV + CBL + Total THC + Total CBC + Total CBDV + Delta10-THC, \*Total THC-O-Acetate = Delta 8 THC-O-Acetate + THC-O-Acetate, \*Analyte Details above show the Dry Weight Concentrations unless specified as 12% moisture concentration. (mg/ml) = Milligrams per Milliliter, LOQ = Limit of Quantitation, LOD = Limit of Detection, Dilution = Dilution Factor (ppb) = Parts per Billion, (%) = Percent, (cfu/g) = Colony Forming Unit per Gram (cfu/g) = Colony Forming Unit per Gram, LOD = Limit of Detection, (µg/g) = Microgram per Gram (ppm) = Parts per Million, (ppm) = (µg/g), (aw) = aw (area ratio) = Area Ratio, (mg/Kg) = Milligram per Kilogram, \*Measurement of Uncertainty = +/- 10%



This report shall not be reproduced, without written approval, from ACS Laboratory. The results of this report relate only to the material or product analyzed. Test results are confidential unless explicitly waived otherwise. Accredited by a third-party accrediting body as a competent testing laboratory pursuant to ISO/IEC 17025 of the International Organization for Standardization.



License No. 800025015  
FL License # CMTL-0003  
CLIA No. 10D1094068

# Certificate of Analysis

Compliance Test

**Root Bioscience**      **Batch #** 211020-G1      **Sampling Method:** MSP 7.3.1      **Production Facility:** Root Bioscience NC, LLC  
951 Aviation Pkwy      **Batch Date:** 2021-11-04      **Test Reg State:** Florida      **Production Date:** 2021-11-04  
Morrisville, NC 27560      **Extracted From:** Hemp Biomass

**Order #** RO0211104-010001      **Sampling Date:** 2021-11-09      **Initial Gross Weight:** 15.017 g      **Number of Units:** 1  
**Order Date:** 2021-11-04      **Lab Batch Date:** 2021-11-09      **Net Weight:** 13.317 g      **Net Weight per Unit:** 3329.250 mg  
**Sample #** AACD348      **Completion Date:** 2021-11-12

**Pesticides FL V4** **Passed**  
(LCMS/GCMS)  
Specimen Weight: 179.390 mg

Dilution Factor: 8.362

Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)	Analyte	LOQ (ppb)	Action Level (ppb)	Result (ppb)
Abamectin	28.23	300	<LOQ	Acephate	30	3000	<LOQ
Acequinocyl	48	2000	<LOQ	Acetamiprid	30	3000	<LOQ
Aldicarb	30	100	<LOQ	Azoxystrobin	10	3000	<LOQ
Bifenazate	30	3000	<LOQ	Bifenthrin	30	500	<LOQ
Boscalid	10	3000	<LOQ	Captan	30	3000	<LOQ
Carbaryl	10	500	<LOQ	Carbofuran	10	100	<LOQ
Chlorantraniliprole	10	3000	<LOQ	Chlordane	10	100	<LOQ
Chlorfenapyr	30	100	<LOQ	Chlormequat Chloride	10	3000	<LOQ
Chlorpyrifos	30	100	<LOQ	Clofentezine	30	500	<LOQ
Coumaphos	48	100	<LOQ	Cyfluthrin	30	1000	<LOQ
Cypermethrin	30	1000	<LOQ	Daminozide	30	100	<LOQ
Diazinon	30	200	<LOQ	Dichlorvos	30	100	<LOQ
Dimethoate	30	100	<LOQ	Dimethomorph	48	3000	<LOQ
Ethoprophos	30	100	<LOQ	Etofenprox	30	100	<LOQ
Etoxazole	30	1500	<LOQ	Fenhexamid	10	3000	<LOQ
Fenoxycarb	30	100	<LOQ	Fenpyroximate	30	2000	<LOQ
Fipronil	30	100	<LOQ	Flonicamid	30	2000	<LOQ
Fludioxonil	48	3000	<LOQ	Hexythiazox	30	2000	<LOQ
Imazalil	30	100	<LOQ	Imidacloprid	30	3000	<LOQ
Kresoxim Methyl	30	1000	<LOQ	Malathion	30	2000	<LOQ
Metaxyl	10	3000	<LOQ	Methiocarb	30	100	<LOQ
Methomyl	30	100	<LOQ	methyl-Parathion	10	100	<LOQ
Mevinphos	10	100	<LOQ	Myclobutanil	30	3000	<LOQ
Naled	30	500	<LOQ	Oxamyl	30	500	<LOQ
Paclbutrazol	30	100	<LOQ	Pentachloronitrobenzene	10	200	<LOQ
Permethrin	30	1000	<LOQ	Phosmet	30	200	<LOQ
Piperonylbutoxide	30	3000	<LOQ	Prallethrin	30	400	<LOQ
Propiconazole	30	1000	<LOQ	Propoxur	30	100	<LOQ
Pyrethrins	30	1000	<LOQ	Pyridaben	30	3000	<LOQ
Spinetoram	10	3000	<LOQ	Spinosad	30	3000	<LOQ
Spiromesifen	30	3000	<LOQ	Spirotetramat	30	3000	<LOQ
Spiroxamine	30	100	<LOQ	Tebuconazole	30	1000	<LOQ
Thiacloprid	30	100	<LOQ	Thiamethoxam	30	1000	<LOQ
Trifloxystrobin	30	3000	<LOQ				

*Xueli Gao*  
Xueli Gao      Lab Toxicologist  
Ph.D., DABT

*Aixia Sun*  
Aixia Sun      Lab Director/Principal Scientist  
D.H.Sc., M.Sc., B.Sc., MT (AAB)



Definitions and Abbreviations used in this report: \*Total CBD = CBD + (CBD-A \* 0.877), \*Total CBDV = CBDV + (CBDVA \* 0.87), \*Total THC = THCA-A \* 0.877 + Delta 9 THC, \*Total THCV = THCV + (THCVA \* 0.87), \*CBG Total = (CBGA \* 0.877) + CBG, \*CBN Total = (CBNA \* 0.877) + CBN, \*Total CBC = CBC + (CBCA \* 0.877), \*Other Cannabinoids Total = Total Cannabinoids - All the listed cannabinoids on the summary section, \*Total Detected Cannabinoids = Delta8-THC + Total CBN + CBT + Delta8-THCV + Total CBG + Total CBD + Total THCV + CBL + Total THC + Total CBC + Total CBDV + Delta10-THC, \*Total THC-O-Acetate = Delta 8 THC-O-Acetate + THC-O-Acetate, \*Analyte Details above show the Dry Weight Concentrations unless specified as 12% moisture concentration. (mg/ml) = Milligrams per Milliliter, LOQ = Limit of Quantitation, LOD = Limit of Detection, Dilution = Dilution Factor (ppb) = Parts per Billion, (%) = Percent, (cfu/g) = Colony Forming Unit per Gram (cfu/g) = Colony Forming Unit per Gram, (µg/g) = Microgram per Gram (ppm) = Parts per Million, (ppm) = (µg/g), (aw) = aw (area ratio) = Area Ratio, (mg/Kg) = Milligram per Kilogram, \*Measurement of Uncertainty = +/- 10%



This report shall not be reproduced, without written approval, from ACS Laboratory. The results of this report relate only to the material or product analyzed. Test results are confidential unless explicitly waived otherwise. Accredited by a third-party accrediting body as a competent testing laboratory pursuant to ISO/IEC 17025 of the International Organization for Standardization.



License No. 800025015  
FL License # CMTL-0003  
CLIA No. 10D1094068

## Certificate of Analysis

Compliance Test

**Root Bioscience**  
951 Aviation Pkwy  
Morrisville, NC 27560

Batch # 211020-G1  
Batch Date: 2021-11-04  
Extracted From: Hemp Biomass

Sampling Method: MSP 7.3.1  
Test Reg State: Florida

Production Facility: Root Bioscience NC, LLC  
Production Date: 2021-11-04

Order # ROO211104-010001  
Order Date: 2021-11-04  
Sample # AACD348

Sampling Date: 2021-11-09  
Lab Batch Date: 2021-11-09  
Completion Date: 2021-11-12

Initial Gross Weight: 15.017 g  
Net Weight: 13.317 g

Number of Units: 1  
Net Weight per Unit: 3329.250 mg

**Residual Solvents - FL (CBD)** **Passed**  
(GCMS)

Specimen Weight: 12.600 mg

Dilution Factor: 1.000

Analyte	LOQ (ppm)	Action Level (ppm)	Result (ppm)	Analyte	LOQ (ppm)	Action Level (ppm)	Result (ppm)
1,1-Dichloroethene	0.16	8	<LOQ	1,2-Dichloroethane	0.04	5	<LOQ
Acetone	2.08	5000	<LOQ	Acetonitrile	1.17	410	<LOQ
Benzene	0.02	2	<LOQ	Butanes	2.5	2000	<LOQ
Chloroform	0.04	60	<LOQ	Ethanol	2.78	5000	<LOQ
Ethyl Acetate	1.11	5000	Passed	Ethyl Ether	1.39	5000	<LOQ
Ethylene Oxide	0.1	5	<LOQ	Heptane	1.39	5000	<LOQ
Hexane	1.17	290	<LOQ	Isopropyl alcohol	1.39	500	<LOQ
Methanol	0.69	3000	Passed	Methylene chloride	2.43	600	<LOQ
Pentane	2.08	5000	<LOQ	Propane	5.83	2100	<LOQ
Toluene	2.92	890	<LOQ	Total Xylenes	2.92	2170	<LOQ
Trichloroethylene	0.49	80	<LOQ				

*Xueli Gao*  
Xueli Gao  
Lab Toxicologist  
Ph.D., DABT

*Aixia Sun*  
Aixia Sun  
Lab Director/Principal Scientist  
D.H.Sc., M.Sc., B.Sc., MT (AAB)



Definitions and Abbreviations used in this report: \*Total CBD = CBD + (CBD-A \* 0.877), \*Total CBDV = CBDV + (CBDVA \* 0.87), \*Total THC = THCA-A \* 0.877 + Delta 9 THC, \*Total THCV = THCV + (THCVA \* 0.87), \*CBG Total = (CBGA \* 0.877) + CBG, \*CBN Total = (CBNA \* 0.877) + CBN, \*Total CBC = CBC + (CBCA \* 0.877), \*Other Cannabinoids Total = Total Cannabinoids - All the listed cannabinoids on the summary section, \*Total Detected Cannabinoids = Delta8-THC + Total CBN + CBT + Delta8-THCV + Total CBG + Total CBD + Total THCV + CBL + Total THC + Total CBC + Total CBDV + Delta10-THC, \*Total THC-O-Acetate = Delta 8 THC-O-Acetate + THC-O-Acetate, \*Analyte Details above show the Dry Weight Concentrations unless specified as 12% moisture concentration. (mg/ml) = Milligrams per Milliliter, LOQ = Limit of Quantitation, LOD = Limit of Detection, Dilution = Dilution Factor (ppb) = Parts per Billion, (%) = Percent, (cfu/g) = Colony Forming Unit per Gram (cfu/g) = Colony Forming Unit per Gram, LOD = Limit of Detection, (µg/g) = Microgram per Gram (ppm) = Parts per Million, (ppm) = (µg/g), (aw) = aw (area ratio) = Area Ratio, (mg/Kg) = Milligram per Kilogram, \*Measurement of Uncertainty = +/- 10%



This report shall not be reproduced, without written approval, from ACS Laboratory. The results of this report relate only to the material or product analyzed. Test results are confidential unless explicitly waived otherwise. Accredited by a third-party accrediting body as a competent testing laboratory pursuant to ISO/IEC 17025 of the International Organization for Standardization.



License No. 800025015  
FL License # CMTL-0003  
CLIA No. 10D1094068

## Certificate of Analysis

Compliance Test

**Root Bioscience**  
951 Aviation Pkwy  
Morrisville, NC 27560

Batch # 211020-G1  
Batch Date: 2021-11-04  
Extracted From: Hemp Biomass

Sampling Method: MSP 7.3.1  
Test Reg State: Florida

Production Facility: Root Bioscience NC, LLC  
Production Date: 2021-11-04

Order # ROO211104-010001  
Order Date: 2021-11-04  
Sample # AACD348

Sampling Date: 2021-11-09  
Lab Batch Date: 2021-11-09  
Completion Date: 2021-11-12

Initial Gross Weight: 15.017 g  
Net Weight: 13.317 g

Number of Units: 1  
Net Weight per Unit: 3329.250 mg

### Pathogenic Microbiology SAE (MicroArray) Passed (Micro Array)

Specimen Weight: 1048.200 mg

Dilution Factor: 1.000

Analyte	Result (cfu/g)	Result	Analyte	Result (cfu/g)	Result
Aspergillus flavus	<1	Absence in 1 g	Aspergillus fumigatus	<1	Absence in 1 g
Aspergillus niger	<1	Absence in 1 g	Aspergillus terreus	<1	Absence in 1 g
Salmonella	<1	Absence in 1 g	STEC E. Coli	<1	Absence in 1 g

### Listeria Monocytogenes Passed (qPCR)

Specimen Weight: 1003.500 mg

Dilution Factor: 1.000

Analyte	Action Level (cfu/g)	Result
Listeria Monocytogenes	1	Absence in 1 g

*Xueli Gao*  
Xueli Gao  
Lab Toxicologist  
Ph.D., DABT

*Aixia Sun*  
Aixia Sun  
Lab Director/Principal Scientist  
D.H.Sc., M.Sc., B.Sc., MT (AAB)



Definitions and Abbreviations used in this report: \*Total CBD = CBD + (CBD-A \* 0.877), \*Total CBDV = CBDV + (CBDVA \* 0.87), \*Total THC = THCA-A \* 0.877 + Delta 9 THC, \*Total THCV = THCV + (THCVA \* 0.87), \*CBG Total = (CBGA \* 0.877) + CBG, \*CBN Total = (CBNA \* 0.877) + CBN, \*Total CBC = CBC + (CBCA \* 0.877), \*Other Cannabinoids Total = Total Cannabinoids - All the listed cannabinoids on the summary section, \*Total Detected Cannabinoids = Delta8-THC + Total CBN + CBT + Delta8-THCV + Total CBG + Total CBD + Total THCV + CBL + Total THC + Total CBC + Total CBDV + Delta10-THC, \*Total THC-O-Acetate = Delta 8 THC-O-Acetate + THC-O-Acetate, \*Analyte Details above show the Dry Weight Concentrations unless specified as 12% moisture concentration. (mg/ml) = Milligrams per Milliliter, LOQ = Limit of Quantitation, LOD = Limit of Detection, Dilution = Dilution Factor (ppb) = Parts per Billion, (%) = Percent, (cfu/g) = Colony Forming Unit per Gram (cfu/g) = Colony Forming Unit per Gram, LOD = Limit of Detection, (µg/g) = Microgram per Gram (ppm) = Parts per Million, (ppm) = (µg/g), (aw) = aw (area ratio) = Area Ratio, (mg/Kg) = Milligram per Kilogram, \*Measurement of Uncertainty = +/- 10%



This report shall not be reproduced, without written approval, from ACS Laboratory. The results of this report relate only to the material or product analyzed. Test results are confidential unless explicitly waived otherwise. Accredited by a third-party accrediting body as a competent testing laboratory pursuant to ISO/IEC 17025 of the International Organization for Standardization.