

# CERTIFICATE OF ANALYSIS

**PRODUCT NAME:** Organic Full Spectrum CBD Tincture - Natural  
**PRODUCT STRENGTH:** 450mg  
**TINCTURE BATCH:** Various lots exp 6/8/2024  
**BEST BY DATE:** 6/8/2024  
**HEMP EXTRACT LOT:** C0908-001

### Physical Attributes

Test	Method	Specification	Results
Color	Joy Internal	Golden to Amber	PASS
Odor	Joy Internal	Characteristic - Olive and Hemp	PASS
Appearance	Joy Internal	Golden to Amber oil in brown glass bottle with dropper.	PASS
Primary Package Eval.	Joy Internal	Container clean and free of filth. Container caps tight and shrink bands intact	PASS
Secondary Package Eval.	Joy Internal	Labeling Compliance Checked, Cartons sturdy and clean. Sufficient cushion material exists. Box taped and secure.	PASS

### Review of Third-Party Analysis

Panel	Method	Specification	Results*	Pass/Fail
<b>Potency - Total CBD</b>	HPLC-UV DAD	LOQ*: ≥ product strength mg / bottle	<b>16.815mg</b>	PASS
<b>Potency - D9-THC</b>	HPLC-UV DAD	LOQ: <0.3% total THC (Full spectrum)	<b>&lt;0.044%</b>	PASS
<b>Expanded Pesticide Panel</b>	HPLC-QQQ	LOQ: Complies with CDPHE 6 CCR 1010-21 Industrial Hemp Extract	<b>Below LOQ</b>	PASS
<b>Microbial</b> Escherichia coli (STEC)	PCR	Complies with CDPHE 6 CCR 1010-21 - LOQ 1 CFU/25 gram**	<b>Absent</b>	PASS
<b>Microbial</b> Salmonella	PCR	Complies with CDPHE 6 CCR 1010-21 - LOQ 1 CFU/25 gram	<b>Absent</b>	PASS
<b>Microbial</b> Yeast and Mold	Culture Plating	Complies with CDPHE 6 CCR 1010-21 - LOQ 10 <sup>2</sup> CFU/gram	<b>Below LOQ</b>	PASS
<b>Microbial</b> Total Coliforms	Culture Plating	Complies with CDPHE 6 CCR 1010-21 - LOQ 10 <sup>2</sup> CFU/gram	<b>Below LOQ</b>	PASS
<b>Microbial</b> Total Aerobic Count	Culture Plating	Complies with CDPHE 6 CCR 1010-21 - LOQ 10 <sup>3</sup> CFU/gram	<b>Below LOQ</b>	PASS
<b>Heavy Metals</b>	ICP-MS	Arsenic (As): ≤1.5 ppm† Cadmium (Cd): ≤0.5 ppm Lead (Pb): ≤0.5 ppm Mercury (Hg): ≤1.5 ppm	<b>Below LOQ</b>	PASS
<b>Mycotoxins</b>	ICP-MS	Total Aflatoxins <20 ppb†† Aflatoxin B1 < 5 ppb Ochratoxin < 5 ppb	<b>Below LOQ</b>	PASS
<b>Residual Solvents</b>	GC-HS-MSD	LOQ: Complies with CDPHE 6 CCR 1010-21 Industrial Hemp Extract	<b>Below LOQ</b>	PASS

\*Level of Quantification  
 \*\*Colony Forming Units per Gram  
 † Parts Per Million †† Part Per Billion

Values expressed in scientific notation.  
 Examples:  
 10<sup>2</sup>=100  
 10<sup>3</sup>=1,000

Quality Certified

Name



7/20/22

Date

### 450 Natural

Batch ID or Lot Number: <b>220616A</b>	Test: <b>Potency</b>	Reported: <b>24Jun2022</b>	USDA License: N/A
Matrix: Concentrate	Test ID: T000211075	Started: 23Jun2022	Sampler ID: N/A
	Method(s): TM14 (HPLC-DAD)	Received: 21Jun2022	Status: N/A

### Cannabinoids

	LOD (%)	LOQ (%)	Result (%)	Result (mg/g)	Notes
Cannabichromene (CBC)	0.006	0.017	ND	ND	
Cannabichromenic Acid (CBCA)	0.005	0.016	ND	ND	
Cannabidiol (CBD)	0.013	0.044	1.770	17.70	
Cannabidiolic Acid (CBDA)	0.013	0.045	ND	ND	
Cannabidivarin (CBDV)	0.003	0.010	0.010	0.10	
Cannabidivarinic Acid (CBDVA)	0.006	0.019	ND	ND	
Cannabigerol (CBG)	0.003	0.010	0.130	1.30	
Cannabigerolic Acid (CBGA)	0.013	0.041	ND	ND	
Cannabinol (CBN)	0.004	0.013	ND	ND	
Cannabinolic Acid (CBNA)	0.009	0.028	ND	ND	
Delta 8-Tetrahydrocannabinol (Delta 8-THC)	0.016	0.049	ND	ND	
Delta 9-Tetrahydrocannabinol (Delta 9-THC)	0.014	0.044	ND	ND	
Delta 9-Tetrahydrocannabinolic Acid (THCA-A)	0.013	0.039	ND	ND	
Tetrahydrocannabivarin (THCV)	0.003	0.009	ND	ND	
Tetrahydrocannabivarinic Acid (THCVA)	0.011	0.035	ND	ND	
<b>Total Cannabinoids</b>			<b>1.910</b>	<b>19.10</b>	
Total Potential THC			ND	ND	
Total Potential CBD			1.770	17.70	

### Final Approval



Daniel Weidensaul  
24Jun2022  
01:26:00 PM MDT

PREPARED BY / DATE



Jacob Miller  
24Jun2022  
01:28:00 PM MDT

APPROVED BY / DATE



<https://results.botanacor.com/api/v1/coas/uuid/81ea5e82-0e30-4677-96b8-c952cd0a6c4f>

**Definitions**  
% = % (w/w) = Percent (weight of analyte / weight of product). ND = None Detected (defined by dynamic range of the method).  
Total Potential Delta 9-THC or CBD is calculated to take into account the loss of a carboxyl group during decarboxylation step, using the following formulas: Total Potential Delta 9-THC = Delta 9-THC + (Delta 9-THCa \*(0.877)) and Total CBD = CBD + (CBDA \*(0.877)).

Testing results are based solely upon the sample submitted to Botanacor Laboratories, LLC, in the condition it was received. Botanacor Laboratories, LLC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices using validated methods. Data was generated using an unbroken chain of comparison to NIST traceable Reference Standards and Certified Reference Materials. This report may not be reproduced, except in full, without the written approval of Botanacor Laboratories, LLC. ISO/IEC 17025:2017 Accredited by A2LA.



Cert #4329.02  
81ea5e820e30467796b8c952cd0a6c4f.1

## 450 Natural

Batch ID or Lot Number: <b>220616A</b>	Test: <b>Microbial Contaminants</b>	Reported: <b>27Jun2022</b>	USDA License: NA
Matrix: Finished Product	Test ID: T000211076	Started: 22Jun2022	Sampler ID: NA
	Method(s): TM25 (PCR) TM24, TM26, TM27 (Culture Plating)	Received: 21Jun2022	Status: NA

## Microbial Contaminants

Contaminants	Method	LOD	Quantitation Range	Result	Notes
STEC	TM25: PCR	10 <sup>0</sup> CFU/g	NA	Absent	Free from visual mold, mildew, and foreign matter
<i>Salmonella</i>	TM25: PCR	10 <sup>0</sup> CFU/g	NA	Absent	
Total Yeast and Mold*	TM24: Culture Plating	10 <sup>1</sup> CFU/g	1.0x10 <sup>2</sup> - 1.5x10 <sup>4</sup>	None Detected	
Total Aerobic Count*	TM26: Culture Plating	10 <sup>2</sup> CFU/g	1.0x10 <sup>3</sup> - 1.5x10 <sup>5</sup>	None Detected	
Total Coliforms*	TM27: Culture Plating	10 <sup>1</sup> CFU/g	1.0x10 <sup>2</sup> - 1.5x10 <sup>4</sup>	None Detected	

## Final Approval



Carly Bader  
25Jun2022  
12:50:00 PM MDT

PREPARED BY / DATE



Eden Thompson-Wright  
27Jun2022  
09:32:00 AM MDT

APPROVED BY / DATE


<https://results.botanacor.com/api/v1/coas/uuid/687ca183-2480-4b5b-a7fc-5d6868a4680a>

### Definitions

\* Values recorded in scientific notation, a common microbial practice of expressing numbers that are too large to be conveniently written in decimal form. Examples: 10<sup>2</sup> = 100 CFU, 10<sup>3</sup> = 1,000 CFU, 10<sup>4</sup> = 10,000 CFU, 10<sup>5</sup> = 100,000 CFU  
 CFU/g = Colony Forming Units per Gram, LOD = Limit of Detection  
 ULOQ = Upper Limit of Quantitation, LLOQ = Lower Limit of Quantitation  
 STEC = Shiga Toxin-Producing E. coli

Testing results are based solely upon the sample submitted to Botanacor Laboratories, LLC, in the condition it was received. Botanacor Laboratories, LLC warrants that all analytical work is conducted professionally in accordance with all applicable standard laboratory practices using validated methods. Data was generated using an unbroken chain of comparison to NIST traceable Reference Standards and Certified Reference Materials. This report may not be reproduced, except in full, without the written approval of Botanacor Laboratories, LLC. ISO/IEC 17025:2017 Accredited by A2LA.



Cert #4329.02  
687ca18324804b5ba7fc5d6868a4680a.1

Batch ID or Lot Number: **C0908-001**  
Test: **Potency**

USDA License:

N/A

Matrix: **Concentrate**  
Test ID: **T000162435**

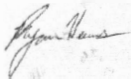
Sampler ID:

N/A

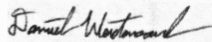
Status: **N/A**  
Method: **TM14 (HPLC-DAD): Potency – Standard Cannabinoid Analysis (Colorado Panel)**

## CANNABINOID PROFILE

Compound	LOD (%)	LOQ (%)	Result (%)	Result (mg/g)
Delta 9-Tetrahydrocannabinolic acid (THCA-A)	0.155	0.445	ND	ND
Delta 9-Tetrahydrocannabinol (Delta 9THC)	0.175	0.502	0.293	2.93
Cannabidiolic acid (CBDA)	0.182	0.583	ND	ND
Cannabidiol (CBD)	0.177	0.569	85.304	853.04
Delta 8-Tetrahydrocannabinol (Delta 8THC)	0.192	0.553	ND	ND
Cannabinolic Acid (CBNA)	0.110	0.317	ND	ND
Cannabinol (CBN)	0.050	0.145	0.051*	0.51*
Cannabigerolic acid (CBGA)	0.161	0.464	ND	ND
Cannabigerol (CBG)	0.039	0.111	6.575	65.75
Tetrahydrocannabivarinic Acid (THCVA)	0.136	0.393	ND	ND
Tetrahydrocannabivarin (THCV)	0.035	0.101	ND	ND
Cannabidivarinic Acid (CBDVA)	0.076	0.243	ND	ND
Cannabidivarin (CBDV)	0.042	0.135	0.348	3.48
Cannabichromenic Acid (CBCA)	0.062	0.179	ND	ND
Cannabichromene (CBC)	0.068	0.196	0.078*	0.78*
<b>Total Cannabinoids</b>			<b>92.649</b>	<b>926.49</b>
Total Potential THC**			0.293	2.93
Total Potential CBD**			85.304	853.04



Ryan Weems



Daniel Weidensaul

PREPARED

APPROVED BY

### Definitions

% = % (w/w) = Percent (Weight of Analyte / Weight of Product)

\* Indicates a value below the Limit of Quantitation (LOQ) and above the Limit of Detection (LOD).

\*\* Total Potential THC/CBD is calculated using the following formulas to take into account the loss of a carboxyl group during decarboxylation step.

Total THC = THC + (THCa \*(0.877)) and

Total CBD = CBD + (CBDA \*(0.877))

Total Cannabinoids result reflects the absolute sum of all cannabinoids detected.

ND = None Detected (Defined by Dynamic Range of the method)

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**27460**

Batch ID or Lot Number: **C0908-001**      Test: **Residual Solvents**

Matrix: N/A      Test ID: T000163124      : 1      USDA License: N/A

Status: N/A      Methods: TM04 (GC-MS): Residual Solvent (Colorado Panel)      Sampler ID: N/A

**RESIDUAL SOLVENTS DETERMINATION**

Solvent	Dynamic Range (ppm)	Result (ppm)	Notes
<b>Propane</b>	52 - 1042	*ND	
<b>Butanes</b> (Isobutane, n-Butane)	103 - 2063	*ND	
<b>Methanol</b>	48 - 956	*ND	
<b>Pentane</b>	64 - 1277	*ND	
<b>Ethanol</b>	76 - 1524	*ND	
<b>Acetone</b>	75 - 1506	*ND	
<b>Isopropyl Alcohol</b>	85 - 1695	*ND	
<b>Hexane</b>	4 - 90	*ND	
<b>Ethyl Acetate</b>	78 - 1554	*ND	
<b>Benzene</b>	0 - 3	*ND	
<b>Heptanes</b>	72 - 1437	*ND	
<b>Toluene</b>	15 - 291	*ND	
<b>Xylenes</b> (m,p,o-Xylenes)	109 - 2172	*ND	



Hannah Wright



Ryan Weems

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**Definitions**

\* ND = None Detected (Defined by Dynamic Range of the method)

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Certificate #4329.02

**27460**

 Batch ID or Lot Number: **C0908-001**  
 Test: **Pesticides**

 Matrix: Concentrate  
 Test ID: T000163121  
 USDA License: N/A

 Status: N/A  
 Method: TM17(LC-QQQ LC MS/MS):  
 Sampler ID: N/A

**PESTICIDE DETERMINATION**

Compound	LOQ (ppb)	Result (ppb)	Compound	LOQ (ppb)	Result (ppb)	Compound	LOQ (ppb)	Result (ppb)
<b>Acephate</b>	38	ND	<b>Fenoxycarb</b>	43	ND	<b>Paclbutrazol</b>	41	ND
<b>Acetamiprid</b>	38	ND	<b>Fipronil</b>	55	ND	<b>Permethrin</b>	305	ND
<b>Avermectin</b>	312	ND	<b>Flonicamid</b>	40	ND	<b>Phosmet</b>	39	ND
<b>Azoxystrobin</b>	42	ND	<b>Fludioxonil</b>	286	ND	<b>Propfos</b>	291	ND
<b>Bifenazate</b>	39	ND	<b>Hexythiazox</b>	35	ND	<b>Propoxur</b>	41	ND
<b>Boscalid</b>	41	ND	<b>Imazalil</b>	278	ND	<b>Pyridaben</b>	303	ND
<b>Carbaryl</b>	35	ND	<b>Imidacloprid</b>	37	ND	<b>Spinosad A</b>	34	ND
<b>Carbofuran</b>	40	ND	<b>Kresoxim-methyl</b>	150	ND	<b>Spinosad D</b>	52	ND
<b>Chlorantraniliprole</b>	34	ND	<b>Malathion</b>	286	ND	<b>Spiromesifen</b>	274	ND
<b>Chlorpyrifos</b>	500	ND	<b>Metalaxyl</b>	42	ND	<b>Spirotetramat</b>	303	ND
<b>Clofentezine</b>	287	ND	<b>Methiocarb</b>	38	ND	<b>Spiroxamine 1</b>	18	ND
<b>Diazinon</b>	290	ND	<b>Methomyl</b>	38	ND	<b>Spiroxamine 2</b>	24	ND
<b>Dichlorvos</b>	286	ND	<b>MGK 264 1</b>	160	ND	<b>Tebuconazole</b>	283	ND
<b>Dimethoate</b>	40	ND	<b>MGK 264 2</b>	117	ND	<b>Thiacloprid</b>	38	ND
<b>E-Fenpyroximate</b>	277	ND	<b>Myclobutanil</b>	39	ND	<b>Thiamethoxam</b>	38	ND
<b>Etofenprox</b>	41	ND	<b>Naled</b>	44	ND	<b>Trifloxystrobin</b>	44	ND
<b>Etoazole</b>	304	ND	<b>Oxamyl</b>	1500	ND			

 Samantha Smith  
 Sam Smith

 Courtney Richards  
 Courtney Richards

PREPARED

APPROVED

**Definitions**

 LOQ = Limit of Quantification  
 ppb = Parts per Billion

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Certificate #4329.02

**27460**

Batch ID or Lot Number: **C0908-001**  
 Test: **Metals**

Matrix: **Unit Co**  
 Test ID: **T000163123**  
 USDA License: **N/A**

Status: **N/A**  
 Method: **TM19 (ICP-MS): Heavy Metals (Colorado Panel)**  
 Sampler ID: **N/A**

**HEAVY METALS DETERMINATION**

Compound	Dynamic Range (ppm)	Result (ppm)	Notes
<b>Arsenic</b>	0.047 - 4.70	ND	
<b>Cadmium</b>	0.046 - 4.56	ND	
<b>Mercury</b>	0.044 - 4.43	ND	
<b>Lead</b>	0.046 - 4.59	ND	

 Daniel Weidensaul

 Ryan Weems

PREPARED

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**Definitions**

ND = None Detected (Defined by Dynamic Range of the method)

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**27460**

Batch ID or Lot Number:  
**C0908-001**

Test:  
**Microbial  
Contaminants**

Matrix:  
Finished Product

Test ID:  
T000163122

USDA License:  
N/A

Status:  
N/A

Methods:  
TM25 (qPCR)  
TM24, TM26, TM27(Culture Plating):  
Microbial (Colorado Panel)

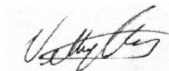
Sampler ID:  
N/A

## MICROBIAL CONTAMINANTS DETERMINATION

Contaminant	Method	LOD	LLOQ	ULOQ	Result	Notes
<b>Total Aerobic Count*</b>	TM-26, Culture Plating	10 <sup>2</sup> CFU/g	10 <sup>3</sup> CFU/g	1.5x10 <sup>5</sup> CFU/g	None Detected	Free from visual mold, mildew, and foreign matter
<b>Total Coliforms*</b>	TM-27, Culture Plating	10 <sup>2</sup> CFU/g	10 <sup>2</sup> CFU/g	1.5x10 <sup>4</sup> CFU/g	None Detected	
<b>Total Yeast and Mold*</b>	TM-24, Culture Plating	10 <sup>2</sup> CFU/g	10 <sup>2</sup> CFU/g	1.5x10 <sup>4</sup> CFU/g	None Detected	
<b>E. coli (STEC)</b>	TM-25, PCR	1 CFU/25 g	NA	NA	Absent	
<b>Salmonella</b>	TM-25, PCR	1 CFU/25 g	NA	NA	Absent	



Carly Bader



Tori King

PREPARED

APPROVED

### Definitions

LOD = Limit of Detection | LLOQ = Lower Limit of Quantitation | ULOQ = Upper Limit of Quantitation  
CFU/g = Colony Forming Units per Gram | STEC = Shiga Toxin-Producing *E. coli*

\* Values recorded in scientific notation, a common microbial practice of expressing numbers that are too large to be conveniently written in decimal form.

Examples:  
10<sup>2</sup> = 100 CFU  
10<sup>3</sup> = 1,000 CFU  
10<sup>4</sup> = 10,000 CFU  
10<sup>5</sup> = 100,000 CFU

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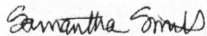



**27460**

Batch ID or Lot Number: <b>C0908-001</b>	Test: <b>Mycotoxins</b>	USDA License: N/A
Matrix: Concentrate	Test ID: T000163125	Sampler ID: N/A
Status: N/A	Method: TM18 (UHPLC-QQQ LCMS/MS): Mycotoxins (Colorado Panel)	

**MYCOTOXIN DETERMINATION**

Compound	Dynamic Range (ppb)	Result (ppb)	Notes
Ochratoxin A	3.9 - 127	ND	N/A
Aflatoxin B1	1.2 - 32.5	ND	
Aflatoxin B2	1.2 - 32.3	ND	
Aflatoxin G1	0.9 - 31.2	ND	
Aflatoxin G2	1.2 - 31.5	ND	
<b>Total Aflatoxins (B1, B2, G1, and G2)</b>		<b>ND</b>	


**Sam Smith**

**Alex Smith**

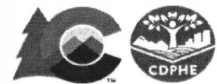
PREPARED BY

APPROVED BY

**Definitions**

ND = None Detected (Defined by Dynamic Range of the method)

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