

STRAIGHT HEMP

CERTIFICATE OF ANALYSIS

PRODUCT: Full Spectrum Hemp Oil – Certified Organic PRODUCTION DATE: 08/2021
BATCH/LOT: OO21231 EXPIRATION DATE: 08/2023
INGREDIENTS: Organic Hemp Seed Oil, Organic Full Spectrum Hemp Extract, Hemp Terpenes
ADDITIVES: none
EXCIPIENTS: none

TEST	METHOD	SPECIFICATION	RESULTS
Strength & Composition			
Identity	Organoleptic	Conforming	PASS
Identity	UPLC/UV	Chemical Fingerprint	PASS
Total Cannabidiol (CBD) ⁱ	UPLC/UV	36.7 – 42.3 mg/g	38.5 mg/g ⁱⁱ
Total Tetrahydrocannabinol (THC) ⁱⁱⁱ	UPLC/UV	NMT 0.30%	0.13%
Terpene assay ^{iv}	HS-GC/MS	n/e	6,301 ppm
Microbiological^v			
Total Plate Count	TM-26	NMT 1,000 cfu/g	PASS
Total Yeast & Mold	TM-24	NMT 100 cfu/g	PASS
Total Coliforms	TM-27	NMT 100 cfu/g	PASS
<i>E. coli</i>	TM-25	Absent/25g	PASS
<i>Salmonella</i>	TM-25	Absent/25g	PASS
Mycotoxins			
Alfatoxin B1	LCMS	NMT 20 ppb	PASS
Alfatoxin B2	LCMS	NMT 20 ppb	PASS
Alfatoxin G1	LCMS	NMT 20 ppb	PASS
Alfatoxin G2	LCMS	NMT 20 ppb	PASS
Ochratoxin	LCMS	NMT 20 ppb	PASS
Heavy Metals^{vi}			
Arsenic (As)	ICP/MS	NMT 1.0 ppm	PASS
Cadmium (Cd)	ICP/MS	NMT 0.5 ppm	PASS
Lead (Pb)	ICP/MS	NMT 0.5 ppm	PASS
Mercury (Hg)	ICP/MS	NMT 0.1 ppm	PASS

ⁱ Total CBD = CBD + (0.877*CBDA) to account for loss of acid group during decarboxylation

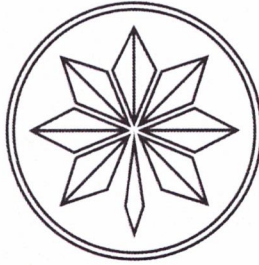
ⁱⁱ Corresponds to **35.6mg/ml**

ⁱⁱⁱ Total THC = THC + (0.877*THCa) to account for loss of acid group during decarboxylation

^{iv} Sum of terpene assay (n=22)

^v Microbiological limits based on USP, WHO, and/or NSF/ANSI

^{vi} Limits for As and Pb set below CA Prop 65 *no significant risk level*; Cd and Hg set below USP permitted daily exposure for 110lb body weight. Complies with 6 CCR 1010-21



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BATCH/LOT: 0021231 EXPIRATION DATE: 08/2023
INGREDIENTS: Organic Hemp Seed Oil, Organic Full Spectrum Hemp Extract, Hemp Terpenes
ADDITIVES: none
EXCIPIENTS: none

TEST	METHOD	SPECIFICATION	RESULTS
Residual Solvents ^{vii}			
Acetone	GC-MS	Below MRL	PASS
Benzene	GC-MS	Below MRL	PASS
Butanes	GC-MS	Below MRL	PASS
Ethanol	GC-MS	Below MRL	PASS
Ethyl Acetate	GC-MS	Below MRL	PASS
Heptanes	GC-MS	Below MRL	PASS
Hexane	GC-MS	Below MRL	PASS
Isopropyl Alcohol	GC-MS	Below MRL	PASS
Methanol	GC-MS	Below MRL	PASS
Pentane	GC-MS	Below MRL	PASS
Propane	GC-MS	Below MRL	PASS
Toluene	GC-MS	Below MRL	PASS
Xylenes	GC-MS	Below MRL	PASS
Pesticides			
Multi-residue panel	UPLC-MS/MS	Below MRL ^{viii}	PASS

NMT = Not More Than

MRL = Method Reporting Limit

n/e = not established


David Cole
Director of Quality


Date

^{vii} 21 solvent panel may also include: 1,1-Dichloroethene, 1,2-Dichloroethane, Acetonitrile, Chloroform, Ethyl Ether, Ethylene Oxide, Methylene Chloride, Trichloroethylene.

^{viii} 50 residue panel

Prepared for:

FSO Organic
Straight Hemp


Batch ID or Lot Number: 0021231	Test: Potency	Reported: 8/30/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
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Matrix: Concentrate	Test ID: T000159165	Started: 8/27/21	USDA License: N/A
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Status: N/A	Method: TM14 (HPLC-DAD): Potency - Broad Spectrum Analysis, 0.01% THC (Colorado Panel)	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A
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CANNABINOID PROFILE

Compound	LOD (%)	LOQ (%)	Result (%)	Result (mg/g)	Notes
Delta 9-Tetrahydrocannabinolic acid (THCA-A)	0.002	0.009	ND	ND	N/A
Delta 9-Tetrahydrocannabinol (Delta 9THC)	0.003	0.010	0.127	1.27	
Cannabidiolic acid (CBDA)	0.021	0.060	0.024*	0.24*	
Cannabidiol (CBD)	0.021	0.059	3.831	38.31	
Delta 8-Tetrahydrocannabinol (Delta 8THC)	0.018	0.063	ND	ND	
Cannabinolic Acid (CBNA)	0.011	0.036	ND	ND	
Cannabinol (CBN)	0.005	0.016	0.005*	0.05*	
Cannabigerolic acid (CBGA)	0.015	0.053	ND	ND	
Cannabigerol (CBG)	0.004	0.013	0.086	0.86	
Tetrahydrocannabivarinic Acid (THCVA)	0.013	0.045	ND	ND	
Tetrahydrocannabivarin (THCV)	0.003	0.011	ND	ND	
Cannabidivarinic Acid (CBDVA)	0.009	0.025	ND	ND	
Cannabidivarin (CBDV)	0.005	0.014	0.022	0.22	
Cannabichromenic Acid (CBCA)	0.006	0.020	ND	ND	
Cannabichromene (CBC)	0.006	0.022	0.198	1.98	
Total Cannabinoids			4.293	42.93	
Total Potential THC**			0.127	1.27	
Total Potential CBD**			3.852	38.52	


 Daniel Weidensaul
 30-Aug-2021
 04:14 PM


 Ryan Weems
 30-Aug-21
 4:15 PM

PREPARED BY / DATE

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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.

$$\text{Total THC} = \text{THC} + (\text{THCa} * (0.877)) \text{ and}$$

$$\text{Total CBD} = \text{CBD} + (\text{CBDa} * (0.877))$$

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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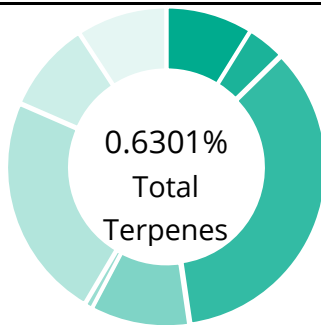


Certificate #4329.02

FSO Organic

Batch ID:	OO21231	Test ID:	T000159166
Type:	Concentrate	Submitted:	08/23/2021 @ 10:24 AM
Test:	Terpenes	Started:	8/24/2021
Method:	TM22 (GC-MS)	Reported:	8/25/2021

TERPENE PROFILE



Compound	%(w/w)	mg/g
(-)-alpha-Bisabolol	0.0551	0.551
Camphene	0.0000	0.000
delta-3-Carene	0.0000	0.000
beta-Caryophyllene	0.1379	1.379
(-)-Caryophyllene Oxide	0.0173	0.173
p-Cymene	0.0000	0.000
Eucalyptol	0.0047	0.047
Geraniol	0.0000	0.000
alpha-Humulene	0.0554	0.554
(-)-Isopulegol	0.0000	0.000
d-Limonene	0.0601	0.601
Linalool	0.0045	0.045
beta-Myrcene	0.2095	2.095
cis-Nerolidol	0.0000	0.000
trans-Nerolidol	0.0029	0.029
Ocimene	0.0000	0.000
beta-Ocimene	0.0000	0.000
alpha-Pinene	0.0528	0.528
(-)-beta-Pinene	0.0231	0.231
alpha-Terpinene	0.0000	0.000
gamma-Terpinene	0.0010	0.010
Terpinolene	0.0058	0.058
	0.6301	6.301


PREDOMINANT TERPENES

alpha-Pinene	0.0528
(-)-beta-Pinene	0.0231
beta-Myrcene	0.2095
delta-3-Carene	0.0000
alpha-Terpinene	0.0000
d-Limonene	0.0601
Linalool	0.0045
beta-Caryophyllene	0.1379
alpha-Humulene	0.0554
(-)-alpha-Bisabolol	0.0551

NOTES:

N/A

FINAL APPROVAL

 Rvan Weems 25-Aug-2021 6:02 PM	 Daniel Weidensaul 25-Aug-2021 6:04 PM
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APPROVED BY / DATE

Testing results are based solely upon the sample submitted to Botanacor Laboratories, LLC. 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 17025:2005 Accredited

A2LA Certificate Number 4329.02



Certificate #4329.02


Prepared for:

FSO Organic
Straight Hemp

Batch ID or Lot Number: 0021231	Test: Microbial Contaminants	Reported: 8/26/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
Matrix: Finished Product	Test ID: T000159168	Started: 8/23/21	USDA License: N/A
Status: N/A	Methods: TM25 (qPCR) TM24, TM26, TM27(Culture Plating): Microbial (Colorado Panel)	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A

MICROBIAL CONTAMINANTS DETERMINATION

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


 Brianne Maillot
 8/26/2021
 11:08:00 AM


 Jackson Osaghae-Nosa
 8/26/2021
 5:16:00 PM

PREPARED BY / DATE

APPROVED BY / DATE

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: 10² = 100 CFU
 10³ = 1,000 CFU
 10⁴ = 10,000 CFU
 10⁵ = 100,000 CFU

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Prepared for:

FSO Organic
Straight Hemp


Batch ID or Lot Number: 0021231	Test: Mycotoxins	Reported: 9/1/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
Matrix: Concentrate	Test ID: T000159171	Started: 8/31/21	USDA License: N/A
Status: N/A	Method: TM18 (UHPLC-QQQ LCMS/MS): Mycotoxins (Colorado Panel)	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A

MYCOTOXIN DETERMINATION

Compound	Dynamic Range (ppb)	Result (ppb)	Notes
Ochratoxin A	3.1 - 126.6	ND	N/A
Aflatoxin B1	1.1 - 32.4	ND	
Aflatoxin B2	1.1 - 31.9	ND	
Aflatoxin G1	1 - 31.5	ND	
Aflatoxin G2	1.2 - 32.2	ND	
Total Aflatoxins (B1, B2, G1, and G2)		ND	


 Sam Smith
 1-Sep-21
 1:46 PM

PREPARED BY / DATE


 Alex Smith
 1-Sep-21
 1:59 PM

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Definitions

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

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Prepared for:

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Straight Hemp


Batch ID or Lot Number: 0021231	Test: Metals	Reported: 8/30/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
Matrix: Unit Co	Test ID: T000159169	Started: 8/27/21	USDA License: N/A
Status: N/A	Method: TM19 (ICP-MS): Heavy Metals (Colorado Panel)	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A

HEAVY METALS DETERMINATION

Compound	Dynamic Range (ppm)	Result (ppm)	Notes
Arsenic	0.043 - 4.27	ND	
Cadmium	0.043 - 4.34	ND	
Mercury	0.044 - 4.40	ND	
Lead	0.041 - 4.06	ND	


 Ryan Weems
 30-Aug-21
 11:16 AM

PREPARED BY / DATE


 Daniel Weidensaul
 30-Aug-21
 11:26 AM

APPROVED BY / DATE

Definitions

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

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Prepared for:


FSO Organic
Straight Hemp

Batch ID or Lot Number: 0021231	Test: Residual Solvents	Reported: 8/27/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
Matrix: N/A	Test ID: T000159170	Started: 8/26/21	USDA License: N/A
Status: N/A	Methods: TM04 (GC-MS): Residual Solvents (Colorado Panel)	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A

RESIDUAL SOLVENTS DETERMINATION

Solvent	Dynamic Range (ppm)	Result (ppm)	Notes
Propane	84 - 1687	*ND	
Butanes (Isobutane, n-Butane)	161 - 3222	*ND	
Methanol	61 - 1219	*ND	
Pentane	89 - 1787	*ND	
Ethanol	97 - 1945	*ND	
Acetone	101 - 2029	*ND	
Isopropyl Alcohol	109 - 2185	*ND	
Hexane	6 - 123	*ND	
Ethyl Acetate	102 - 2043	*ND	
Benzene	0 - 4	*ND	
Heptanes	97 - 1937	*ND	
Toluene	18 - 369	*ND	
Xylenes (m,p,o-Xylenes)	133 - 2669	*ND	


 Ryan Weems
 27-Aug-21
 11:52 AM


 Sam Smith
 27-Aug-21
 12:05 PM

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Definitions

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

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Prepared for:

FSO Organic
Straight Hemp

Batch ID or Lot Number: 0021231	Test: Pesticides	Reported: 8/26/21	Location: 5135 W 58th Ave, Unit 5 Arvada, CO 80002
Matrix: Concentrate	Test ID: T000159167	Started: 8/24/21	USDA License: N/A
Status: N/A	Method: TM17(LC-QQQ LC MS/MS):	Received: 08/23/2021 @ 10:24 AM	Sampler ID: N/A

PESTICIDE DETERMINATION

Compound	LOQ (ppb)	Result (ppb)	Compound	LOQ (ppb)	Result (ppb)	Compound	LOQ (ppb)	Result (ppb)
Acephate	28	ND	Fenoxycarb	41	ND	Paclobutrazol	43	ND
Acetamiprid	30	ND	Fipronil	55	ND	Permethrin	309	ND
Avermectin	273	ND	Flonicamid	58	ND	Phosmet	28	ND
Azoxystrobin	38	ND	Fludioxonil	370	ND	Prophos	370	ND
Bifenazate	42	ND	Hexythiazox	28	ND	Propoxur	34	ND
Boscalid	41	ND	Imazalil	293	ND	Pyridaben	291	ND
Carbaryl	31	ND	Imidacloprid	31	ND	Spinosad A	30	ND
Carbofuran	33	ND	Kresoxim-methyl	150	ND	Spinosad D	60	ND
Chlorantraniliprole	16	ND	Malathion	308	ND	Spiromesifen	226	ND
Chlorpyrifos	500	ND	Metalaxyl	39	ND	Spirotetramat	334	ND
Clofentezine	287	ND	Methiocarb	42	ND	Spiroxamine 1	21	ND
Diazinon	292	ND	Methomyl	29	ND	Spiroxamine 2	22	ND
Dichlorvos	300	ND	MGK 264 1	175	ND	Tebuconazole	339	ND
Dimethoate	39	ND	MGK 264 2	138	ND	Thiacloprid	36	ND
E-Fenpyroximate	274	ND	Myclobutanil	13	ND	Thiamethoxam	34	ND
Etofenprox	40	ND	Naled	42	ND	Trifloxystrobin	35	ND
Etoxazole	301	ND	Oxamyl	1500	ND			


 Sam Smith
 8/26/2021
 4:08:00 PM


 Karen Winternheimer
 8/26/2021
 4:11:00 PM

PREPARED BY / DATE

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Definitions

LOQ = Limit of Quantification
 ppb = Parts per Billion

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