CERTIFICATE OF ANALYSIS

PRODUCT NAME: Tincture - Mint

PRODUCT STRENGTH: 450 mg

LOT NUMBER: 191216B **BEST BY DATE:** 06/21

HEMP EXTRACT LOT NUMBER: 111919

Physical Atttributes

Test	Method	Specification	Results
Color	SOP-100	Golden to Amber	PASS
Odor	SOP-100	Characteristic - Olive and hemp, minty	PASS
Appearance	SOP-100	Golden to Amber oil in brown glass bottle with dropper	PASS
Primary Package Eval.	SOP-132	Container clean and free of filth. Container caps tight and shrink bands intact	PASS
Secondary Package Eval.	SOP-132	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
Potency - Total CBD	SOP-111	427.5-562.2 mg CBD LOQ*: 10 PPM† (0.001%)	454.2 mg	PASS
Potency - D9-THC	SOP-111	None Detected LOQ: 10 PPM (0.001%)	<u>ND</u>	PASS
FL Compliant Pesticide Panel	SOP-111	Florida State Hemp Program Rule 5B-57.014: Action Limits for Pesticides	<u>ND</u>	PASS
Microbial - Stec E.Coli	SOP-111	Complies with USP 61/62	<lod< td=""><td>PASS</td></lod<>	PASS
Microbial - Salmonella	SOP-111	Complies with USP 61/62	<lod< td=""><td>PASS</td></lod<>	PASS
Microbial - Aspergillus	SOP-111	Complies with USP 61/62	<lod< td=""><td>PASS</td></lod<>	PASS
CA Compliant Heavy Metal Panel	SOP-111	Arsenic (As): ≤1.5 PPM Cadmium (Cd): ≤0.5 PPM Mercury (Hg): ≤1.0 PPM Lead (Pb): ≤0.5 PPM	<lod< td=""><td>PASS</td></lod<>	PASS

^{*} Level of Quantitation, † Parts Per Million

Quality Certified by: Darcis Woran 1/17/2020

Darcie Moran Date

Director of Quality Assurance

FO-106 Certificate of Analysis Rev. 1.0 - Effective Date: 1/3/2020



Order #: 44694 Order Name: CTM450-191216B

Batch#: 4

Received: 12/20/2019 Completed: 01/10/2020



Sample



N/D D9-THC 1.647% Total CBD

473.7 mg Cannabinoids per bottle

454.2 mg CBD per bottle

1 bottle = 30 ml per bottle x density (0.919) x Cannabinoid concentration

Cannabinoids Test

SHIMADZU INTEGRATED UPLC-PDA

GSL SOP 400	PREPARED: 12/23/2019 11:57:57		UPLOADED: 12	/23/2019 18:05:46
Cannabinoids	LOQ	weight(%)	mg/g	mg/bottle
D9-THC	10 PPM	N/D	N/D	N/D
THCA	10 PPM	N/D	N/D	N/D
CBD	10 PPM	1.647%	16.474	454.2
CBDA	20 PPM	N/D	N/D	N/D
CBDV	20 PPM	0.006%	0.057	1.6
CBC	10 PPM	N/D	N/D	N/D
CBN	10 PPM	N/D	N/D	N/D
CBG	10 PPM	0.065%	0.650	17.9
CBGA	20 PPM	N/D	N/D	N/D
D8-THC	10 PPM	N/D	N/D	N/D
THCV	10 PPM	N/D	N/D	N/D
TOTAL D9-THC		N/D	N/D	N/D
TOTAL CBD*		1.647%	16.474	454.2
TOTAL CANNABINOIDS		1.718%	17.181	473.7





Reporting Limit 10 ppm *Total CBD = CBD + CBDA x 0.877

N/D - Not Detected, B/LOQ - Below Limit of Quantification

Dr. Andrew Hall, Ph.D., Chief Scientific Officer

Ben Witten, MS, MT., Lab Director

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Order #: 44694 Order Name: CTM450-191216B Batch#: 4 Received: 12/20/2019

Received: 12/20/2019 Completed: 01/10/2020



PESTICIDE ANALYSIS:

GSL SOP 401 PREPARED: 12/23/2019 15:47:09 UPLOADED: 12/26/2019 12:52:04

GCMS-MS - Shimadzu GCMS-TQ8040

Pesticide	Action Level (ppm)	Results (ppm)	LOQ (ppm)	LOD (ppm)
CHLORFENAPYR	0.010	N/D	0.003	0.001
COUMAPHOS	0.010	N/D	0.003	0.001
CYFLUTHRIN	0.010	N/D	0.003	0.001
CYPERMETHRIN	0.500	N/D	0.003	0.001

Pesticide	Action Leve	l Results	LOQ	LOD
	(ppm)	(ppm)	(ppm)	(ppm)
FIPRONIL	0.010	N/D	0.003	0.001
FLUDIOXONIL	0.020	N/D	0.003	0.001
PENTACHLORONITROBENZENI	E 0.030	N/D	0.003	0.001

LCMS-MS - Shimadzu LCMS-8060

Pesticide	Action Level (ppm)	Results (ppm)	LOQ (ppm)	LOD (ppm)	Pesticide	Action Level (ppm)	Results (ppm)	LOQ (ppm)	LOD (ppm)
ABAMECTIN B1A	0.020	N/D	0.005	0.001	METALAXYL	0.010	N/D	0.001	0.001
ACEPHATE	0.020	N/D	0.001	0.001	METHIOCARB	0.010	N/D	0.005	0.001
ACEQUINOCYL	0.020	N/D	0.001	0.001	METHOMYL	0.010	N/D	0.001	0.001
ACETAMIPRID	10.000	N/D	0.005	0.001	MEVINPHOS	0.010	N/D	0.001	0.001
ALDICARB	0.010	N/D	0.005	0.001	MYCLOBUTANIL	0.020	N/D	0.005	0.001
AZOXYSTROBIN	0.100	N/D	0.001	0.001	NALED	0.010	N/D	0.005	0.001
BIFENAZATE	0.010	N/D	0.005	0.001	OXAMYL	0.026	N/D	0.001	0.001
CHLORPYRIFOS	0.020	N/D	0.001	0.001	PACLOBUTRAZOL	0.010	N/D	0.005	0.001
CLOFENTEZINE	0.040	N/D	0.001	0.001	PERMETHRINS	0.020	N/D	0.005	0.001
DAMINOZIDE	0.010	N/D	0.005	0.001	PHOSMET	0.020	N/D	0.005	0.001
DIAZANON	0.010	N/D	0.001	0.001	PIPERONYL	3.000	N/D	0.001	0.001
DICHLORVOS	0.020	N/D	0.005	0.001	BUTOXIDE	3.000	N/D	0.001	0.001
DIMETHOATE	0.010	N/D	0.001	0.001	PRALLETHRIN	0.020	N/D	0.005	0.005
DIMETHOMORPH	0.010	N/D	0.005	0.001	PROPICONAZOLE	0.020	N/D	0.010	0.005
ETHOPROPHOS	0.010	N/D	0.001	0.001	PROPOXUR	0.020	N/D	0.001	0.001
ETOFENPROX	0.010	N/D	0.001	0.001	PYRETHRINS	0.500	N/D	0.005	0.005
ETOXAZOLE	0.010	N/D	0.010	0.005	(PYRETHRIN I)	0.500	N/D	0.005	0.005
FENHEXAMID	0.080	N/D	0.005	0.001	PYRIDABEN	0.020	N/D	0.005	0.001
FENOXYCARB	0.010	N/D	0.005	0.001	SPINETORAM	0.040	N/D	0.001	0.001
FENPYROXIMATE	0.100	N/D	0.001	0.001	SPINOSAD	0.020	N/D	0.001	0.001
FLONICAMID	0.100	N/D	0.025	0.010	(SPINOSYN A)	0.020	IN/D	0.001	0.001
HEXYTHIAZOX	0.100	N/D	0.005	0.001	SPINOSAD	0.020	N/D	0.004	0.001
IMAZALIL	0.010	N/D	0.005	0.001	(SPINOSYN D)	0.020	N/D	0.001	0.001
IMIDACLOPRID	0.020	N/D	0.005	0.001	SPIROMESIFEN	0.030	N/D	0.005	0.001
KRESOXIM-METHYL	0.020	N/D	0.010	0.005	SPIROTETRAMAT	0.020	N/D	0.001	0.001
MALATHION	0.010	N/D	0.005	0.001	SPIROXAMINE	0.010	N/D	0.001	0.001
					TEBUCONAZOLE	0.010	N/D	0.005	0.001
					THIACLOPRID	0.010	N/D	0.001	0.001
					THIAMETHOXAM	0.010	N/D	0.001	0.001

N/D = Not Detected, A/LOQ = Above LOQ Level, B/LOQ = Below LOQ Level, B/LOD = Below LOD Level

Dr. Andrew Hall, Ph.D., Chief Scientific Officer

Ben Witten, MS, MT., Lab Director

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0.020

TRIFLOXYSTROBIN





0.001



0.001

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Order #: 44694 Order Name: CTM450-191216B Batch#: 4 Received: 12/20/2019 Completed: 01/10/2020



Microbial Analysis:

Microbial Analysis GSL SOP 406

Uploaded: 12/26/2019 13:07:03

PCR - Agilent AriaMX Test	Test Method Used	Device Used	LOD	Allowable Criteria	Actual Result	Pass/Fail
STEC E.COLI*	USP 61/62†	ARIAMX PCR	2 COPIES OF DNA	PRESENCE / ABSENT	BELOW LOD	PASS
SALMONELLA*	USP 61/62†	ARIAMX PCR	5 COPIES OF DNA	PRESENCE / ABSENT	BELOW LOD	PASS
ASPERGILLUS	USP 61/62†	ARIAMX PCR	ASP_LOD***	PRESENCE / ABSENT	BELOW LOD	PASS

[†] USP 61 (enumeration of bacteria TAC, TYM, and ENT/Coliform), USP 62 (identifying specific species E.coli Aspergillus etc)

(Mm) FW

Dr. Andrew Hall, Ph.D., Chief Scientific Officer

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Ben Witten, MS, MT., Lab Director

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^{*} STEC and Salmonella run as Multiplex

^{***} Flavus = 2 Copies of DNA / Fumigatis = 2 Copies of DNA Niger = 20 Copies of DNA / Terrus = 10 copies of DNA



Order #: 44694 Order Name: CTM450-191216B Batch#: 4 Received: 12/20/2019

Completed: 01/10/2020



Heavy Metals Analysis:

ICP-MS - Shimadzu ICPMS-2030 GSL SOP 403

Uploaded: 12/23/2019 20:16:47

Metal	Action Level (ppb)	Result (ppb)
ARSENIC (AS)	200	B/LOQ
CADMIUM (CD)	200	B/LOQ
MERCURY (HG)	100	B/LOQ
LEAD (PB)	500	B/LOQ

Lower Limit of Quantitation (LOQ) is 75 ppb

Dr. Andrew Hall, Ph.D., Chief Scientific Officer

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total cannabinoids 88.5%

CBD decarb total 84.61%

Δ9-ΤΗС

ND

This Product
Has Been
Tested and
Complies with
7USC1639o(1)
Definition of
Hemp









https://portal.a2la.org/scopepdf/4961-01.pdf

Sample Handling

test ID sample date 12/4/19 2:46 PM order **6070** labID **9MD44** weight 5.4 g source

Methods	method	equipment		
weights	MSP-7.3.1.3	AUX120.1		
potency	MSP-7.5.1.5	LC-2030		
terpenes	MSP-7.5.1.7	QP2020/HS20		
pesticides	MSP-7.5.1.8	LC-8060		
mycotoxins	MSP-7.5.1.8	LC-8060		
microbial	MSP-7.5.1.9	Hardy Diag		
solvents	MSP-7.5.1.6	QP2020/HS20		
metals	MSP-7.5.1.10	ICPMS2030		

cannabichromene (CBC)





FI ORAI

concentrate

Pesticides (other)

acephate

aldicarb

boscalid

carbaryl

carbofuran

chlorpyrifos

clofentezine

cypermethrin

diazinon

dichlorvos

dimethoate

etofenprox

flonicamid

fludioxonil

malathion

metalaxyl

methomyl

oxamyl

phosmet

prallethrin

pyridaben

spiroxamine

thiacloprid

tebuconazole

thiamethoxam

propiconazole

methiocarb

permethrins

piperonyl butoxide

hexythiazox

kresoxym-methyl

fipronil

fenpyroximate

chloantraniliprole

acetamiprid

azoxystrobin

9MD44

0.00 ppm

0.01 ppm

mqq 00.0

0.00 ppm

LOQ

<10ppb

Potency	%	estimated error	Terpenes	%	estimated error		%	estimated error		%	estimated error
tetrahydrocannabolic acid (THCa)	ND	± 0.02 %	ß-myrcene	0.004%	± 0.0018%	camphene	0.000%	± 0.0016 %	quaiol	0.000%	± 0.0016 %
Δ^9 -tetrahydrocannabinol (Δ^9 THC)	ND	± 0.02 %	B-caryophyllene	0.000%	± 0.0016%			± 0.0016 %	ß-bisabolol		± 0.0016 %
Δ^{8} -tetrahydrocannabinol (Δ^{8} THC)	ND	± 0.02 %	alpha-pinene	0.003%	± 0.0017%	a-terpenine	0.000%	± 0.0016 %	eucalyptol	0.000%	± 0.0016 %
tetrahydrocannabivarin (THCv)	ND	± 0.02 %	B-pinene	0.008%	± 0.0019%	para-cymene	0.000%	± 0.0016 %	* *		
cannabidiolic acid (CBDa)	.14%	± 0.04 %	D-limonene	0.000%	± 0.0016%	g-terpenine	0.000%	± 0.0016 %			
cannabidiol (CBD)	84.48%	± 0.75 %	linalool	0.000%	± 0.0016%	(-)-isopulegol	0.000%	± 0.0016 %		total	
cannabidivarin (CBDv)	.33%	± 0.05 %	ocimene	0.000%	± 0.0033%	geraniol	0.000%	± 0.0016 %		terpen	es
cannabigerolic acid (CBGa)	ND	± 0.02 %	terpinolene	0.000%	± 0.0016%	cis-nerolidol	0.000%	± 0.0016 %		001	10/
cannabigerol (CBG)	3.54%	± 0.15 %	alpha-humulene	0.000%	± 0.0016%	trans-nerolidol	0.000%	± 0.0016 %		0.01	I %
cannabinol (CBN)	ND	± 0.02 %									

Solvents	MT limit 9N	1D44 L	_OQ	Pesticides (MT)	MT limit	9MD44	LOQ
propane	5,000 PA	SS <1	0ppm	abamectin	2.50 ppm	PASS	<10ppb
butanes	5,000 PA	SS <1	0ppm	acequinocyl	10.00 ppm	PASS	<10ppb
pentanes	5,000 PA	SS <1	0ppm	bifenazate	1.00 ppm	PASS	<10ppb
hexanes	290 PA	SS <1	0ppm	bifenthrin	1.00 ppm	PASS	<10ppb
cyclohexane	3,880 PA	SS <1	0ppm	chlormeguat cl.	5.00 ppm	PASS	<10ppb
heptanes	5,000 PA	SS <1	0ppm	cyfluthrin	5.00 ppm	PASS	<80ppb
methanol	3,000 PA	SS <1	0ppm	diaminozide	5.00 ppm	PASS	<10ppb
isopropanol	5,000 PA	SS <1	0ppm	etoxazole	1.00 ppm	PASS	<10ppb
acetone	5,000 PA	SS <1	0ppm	fenoxycarb	1.00 ppm	PASS	<10ppb
ethyl acetate	5,000 PA	SS <1	0ppm	imazalil	1.00 ppm	PASS	<10ppb
benzene	2 PA	SS <0.	2ppm	imidacloprid	2.00 ppm	PASS	<10ppb
toluene	890 PA	SS <1	0ppm	myclobutanil	0.60 ppm	PASS	<10ppb
xylenes	2,170 PA	SS <1	0ppm	paclobutrazol	2.00 ppm	PASS	<10ppb
chloroform	2. PA		2ppm	pyrethrins	5.00 ppm	PASS	<10ppb
dichloromethane	600 PA	SS <1	0ppm	spinosad	1.00 ppm	PASS	<10ppb
				spiromesifen	1.00 ppm	PASS	<10ppb
Tavia Matala				spirotetramat	1.00 ppm	PASS	<10ppb
Toxic Metals MT III	mit 9MD44	LOQ		trifloxystrobin	1.00 ppm	PASS	<10ppb
arsenic 2 pp	om PASS	<10ppb		-			
cadmium 4.1 pp		<10ppb		Microbial			
lead 1.2 pp		<10ppb		Microbial	MT limit	9MD44	LOQ
mercury 0.4 pp	om PASS	<10ppb		E. coli	10 CFU	PASS	<10 CFU/q
				Salmonella sp.	10 CFU	PASS	<10 CFU/g
				molds	10000 CFU	PASS	<10k CFU/g
				Aflatoxin B1,B2,G1,G2	20 ppb	PASS	<20 ppb
				Ochratoxin A	20 ppb	PASS	<20 ppb

± 0.02 %

• All testing was completed onsite at 6073 US93N, Olney MT •• Potency (cannabinoid concentration) is calcuated from the equation: [cannabioid] = [cannabinoid]_{HPLC} x volume_{allulor}/m_{dy}. Terpene concentration is calcuated from the equation: [terpene] = (terpene mass)_{GCMS} / m_{dry}. ••• Decarboxyted cannabinoid concentration is calculated from the equation XXX $_{total}$ = 0.877 x XXXa + XXX •••• Standards are used to calibrate the resulting data and estimate error using a standard estimate of error method; this is combined with error from weighing and dilution using the propagation of error formula $s_g^2 = \sum (\partial f/\partial i)^2 s_s^2$ where i is the contributor to error. The 95% confidence range is calculated from the equation: (concentration) \pm t_{CL90} x s_g. Sampling error is not

Certified by:

H

Kyle Larson, MSc (Biology) Deputy Director 6073 US93N, Olney MT 59927 406-881-2019 rdb@stwlabs.com