CERTIFICATE OF ANALYSIS

PRODUCT NAME: CBD Dog Chews
PRODUCT STRENGTH: 2 mg / chew
BATCH: 21260A
BEST BY DATE: HEMP 06/2023
EXTRACT LOT: 2952498 - tested under lot number 21260A

Click on the links to view third-party reports

Physical Atttributes

Test	Method	Specification	Results
Color	Joy Internal	Brown	PASS
Odor	Joy Internal	Beef and grains, with some yeast	PASS
Appearance	Joy Internal	Squat cylindrical dog treats a plastic amber container	PASS
Primary Package Eval.	Joy Internal	Container clean and free of filth. Container caps tight and pressure seal is 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
Potency - Total CBD	HPLC-UV DAD	LOQ*: ≥ 2 mg / chew	**3.2 mg**	PASS
Potency - D9-THC	HPLC-UV DAD	LOQ: <0.01% (broad spectrum)	**Below LOQ**	PASS
Pesticide Panel	LCMS-MS	Complies with Oregon Action limits	**Below LOQ**	PASS
Microbial Escherichia coli (STEC)	qPCR	Complies with USP 61/62	**Absent**	PASS
Microbial Salmonella	qPCR	Complies with USP 61/62	**Absent**	PASS
Microbial Yeast and Mold	Culture Plating	Complies with USP 61/62	**Below LOQ**	PASS
Microbial Total Coliforms	Culture Plating	Complies with USP 61/62	**Below LOQ**	PASS
Microbial Total Aerobic Count	Culture Plating	Complies with USP 61/62	**Below LOQ**	PASS
Heavy Metals	ICP-MS	Arsenic (As): ≤1.5 ppm† Cadmium (Cd): ≤0.5 ppm Lead (Pb): ≤0.5 ppm Mercury (Hg): ≤1.5 ppm	**Below LOQ**	PASS
Mycotoxins	LCMS-MS	Total Aflatoxins <20 ppb†† Afltoxin B1 < 20 ppb Ochratoxin < 20 ppb	**Below LOQ**	PASS
Residual Solvents	GC-MS	Complies with Oregon Action limits	**Below LOQ**	PASS

*Level of Quantification
† Parts Per Million †† Part Per Billion

Quality Certified Kayla Kolber 09/24/2021
Kayla Kolber Date
Quality Assurance Technician

5042 Technology Parkway, Fort Collins, CO 80528
Tel: (833) 569-7223 www.joyorganics.com

certificate ID
1JN32

7USC1639 Certificate of Analysis

CHEW21260A

11808
order

total cannabinoids
3.4mg

per
chew

9/24/21 8:58 AM

total THC‡ ND
total CBD‡ 3.2mg

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

Stillwater Laboratories

Incoming Inspection MSP-7.5.1.2

DESCRIPTION: Dog Treat sample received 9/21/2021 12:08:21 PM in a client-labeled jar, by commercial courier. 1.

SECURITY FEATURE: WATERMARK MUST MATCH CERTIFICATE ID AND ISSUE DATE

Potency MSP-7.5.1.4

	per	chew	LOD	LOQ	error
total cannabinoids		**3.4mg**			**±0.28mg**
total THC‡		**ND**			**±0.22mg**
total THC (THC+THCa)		**ND**			**±0.22mg**
total CBD‡		3.2mg			±0.27mg
total CBD (CBD+CBDa)		3.2mg			±0.27mg
tetrahydrocannabolic acid (THCa)		ND			±0.22mg
Δ9-tetrahydrocannabinol (Δ9 THC)		ND			±0.21mg
Δ8-tetrahydrocannabinol (Δ8 THC)*		ND			±0.28mg
tetrahydrocannabivarin (THCv)		ND			±0.23mg
cannabidiolic acid (CBDa)		ND			±0.19mg
cannabidiol (CBD)		3.2mg			±0.28mg
cannabidivarin (CBDv)		ND			±0.22mg
cannabigerolic acid (CBGa)		ND			±0.20mg
cannabigerol (CBG)		ND			±0.06mg
cannabinol (CBN)		ND			±0.12mg
cannabichromene (CBC)		<LOQ			±0.22mg

Terpenes MSP-7.5.1.6

		LOD	LOQ	error
total terpenes	**ND**			**±0.0026%**
linalool	ND			±0.0012%
β-myrcene	ND			±0.0028%
D-limonene	ND			±0.0016%
α-pinene	ND			±0.0011%
β-pinene	ND			±0.0023%
ocimene	ND			±0.0047%
terpinolene	ND			±0.0034%
α-humulene	ND			±0.0023%
β-caryophyllene	ND			±0.0064%
α-bisabolol	ND			±0.0051%
camphene	ND			±0.0029%
Δ3-carene	ND			±0.0126%
caryophyllene oxide	ND			±0.0081%
para-cymene	ND			±0.0477%
eucalyptol	ND			±0.0066%
geraniol	ND			±0.0200%
guaiol	ND			±0.0064%
isopulegol	ND			±0.0063%
cis-nerolidol	ND			±0.0107%
trans-nerolidol	ND			±0.0053%
α-terpenine	ND			±0.0033%

Pass / Fail Criteria

Microbial MSP-7.5.1.10

FAIL: no failures
PASS: E.coli, Salmonella sp., molds

Mycotoxins MSP-7.5.1.8

FAIL: no failures
PASS: Ochratoxin A, Aflatoxin B1B2G1G2, Aflatoxin B1. Aflatoxin B2. Aflatoxin G1.

Moisture MSP-7.5.1.3

not required / not requested

Metals MSP-7.5.1.7

FAIL: no failures
PASS: Arsenic, Cadmium, Lead, Mercury

Pesticides MSP-7.5.1.8

FAIL: no failures
PASS: Abamectin, Acephate, Acequinocyl, Acetamiprid, Aldicarb, Azoxystrobin, Bifenazate, Bifenthrin, Boscalid, Carbaryl, Carbofuran, Chloantraniliprole, Chlorfenapyr, Chlorpyrifos, Clofentezine, Coumaphos, Cyfluthrin, Cypermethrin, Daminozide, Dichlorvos, Diazinon, Dimethoate, Etoxazole, Fenoxycarb, Fenpyroximate, Fipronil, Flonicamid, Fludioxonil, Hexythiazox, Imazalil, Imidacloprid, Malathion, Metalaxyl, Methiocarb, Methomyl, Methyl parathion, Mevinphos, Myclobutanil, Naled, Oxamyl, Paclobutrazol, Permethrin, Phosmet, Piperonylbutoxide, Prallethrin, Propiconazole, Propoxur, Pyrethrin, Pyridaben, Spinetoram, Spinosad, Spiromesifen, Spirotetramat, Spiroxamine, Tebuconazole, Thiacloprid, Thiamethoxam, Trifloxystrobin

Solvents MSP-7.5.1.7

FAIL: no failures
PASS: Acetone, Acetonitrile, Benzene, Butane, Chloroform, Cyclohexane, Ethanol, Heptane, Hexane, Isopropyl alcohol, Methanol, Pentane, Propane, Toluene, Xylenes

Analysis Location: L-00001

Certified by:

Kyle Larson, MSc (Biology)
Deputy Director

QA Manager

Jacob Harris BSc (ChemE MechE)

ASA PFC Laboratory
A2LA ACCREDITED
CERT #s 4961.01, 4961.02 & 4961.03

https://customer.a2la.org/index.cfm?event=directory.detail&labPID=423635B2-5128-4C6F-871A-419DCF43B0D7

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These results are only valid for the samples tested. • Potency (cannabinoid concentration) is calcuated as: [cannabioid] = $[\text{cannabinoid}]_{HPLC} \times \text{volume}_{dilution}/m_{dry}$. •• Decarboxyted cannabinoid concentration is calculated $XXX_{total} = 0.877 \times XXXa + XXX$ ••• Standards are used to calibrate the resulting data and estimate error using a standard estimate of error method; LOD is the limit of detection ($3.3s_i$), LOQ is the limit of quantification (3xLOD), and experimental error is calculated from weighing, dilution, and interpolation error using the formula $s_g^2 = \sum(\partial f/\partial i)^2 s_i^2$ where i is the contributor to error. The 95% confidence range is calculated from: (concentration) ± $t_{CL90} \times s_g$. Sampling error is not considered in error calculations. ND = not detected (< LOD), NT = not tested, NL = no limit, NA = not applicable. ‡ = decarbed, * = analyte is off-scope.

certificate ID
1JN32

CHEW21260A

order 11808
rec'd date 9/21/2021 12:08:21 PM
issue date 9/24/2021 8:58:32 AM

11808
order

ANALYTICAL DATA

Report Version: 1
Analysis Location: L-00001

Stillwater Laboratories

Methods and Instruments

MSP-7.3.1.1	BAL-05	9/21/2021		MSP-7.5.1.7	QP2020/HS20	9/22/2021	L-00001
MSP-7.5.1.2	YSC	9/22/2021		MSP-7.5.1.8	LCMS8060	9/22/2021	
MSP-7.5.1.3	6MOC63u	9/22/2021		MSP-7.5.1.8	LCMS8060	9/22/2021	
MSP-7.5.1.4	LC-2030C	9/22/2021	L-00001	MSP-7.5.1.10A	AriaMx/Hardy	9/22/2021	
MSP-7.5.1.6	QP2020/HS20	9/22/2021	L-00001	MSP-7.5.1.11	ICPMS2030	9/22/2021	

Mycotoxins MSP-7.5.1.8

		limit	LOD	LOQ	error	result
Ochratoxin A	ND	20 ppb	0.3	0.8	±0.8 ppb	PASS
Aflatoxin B1B2G1G2	ND	20 ppb	0.3	0.8	±0.8 ppb	PASS

Microbial MSP-7.5.1.10

		limit	LOD	LOQ	error	result
E.coli	ND	0CFU	0.0	0.1	±0.1CFU	PASS
Salmonella sp.	ND	0CFU	0.0	0.1	±0.1CFU	PASS
molds	ND	10000CFU	1.6	4.7	±4.7CFU	PASS

Solvents MSP-7.5.1.7

		limit	LOD	LOQ	error	result
Acetone	26 ppm	5000 ppm	0.6	1.9	±2.6 ppm	PASS
Acetonitrile	ND	410 ppm	0.6	1.7	±1.7 ppm	PASS
Benzene	ND	0 ppm	0.0	0.1	±0.1 ppm	PASS
Butane	ND	5000 ppm	1.3	4.0	±4.0 ppm	PASS
Chloroform	ND	0 ppm	0.1	0.2	±0.2 ppm	PASS
Cyclohexane	ND	0 ppm	0.5	1.5	±1.5 ppm	PASS
Ethanol	25 ppm	10000 ppm	0.7	2.0	±2.6 ppm	PASS
Heptane	ND	5000 ppm	0.4	1.2	±1.2 ppm	PASS
Hexane	ND	290 ppm	0.5	1.5	±1.5 ppm	PASS
Isopropyl alcohol	ND	5000 ppm	0.6	1.8	±1.8 ppm	PASS
Methanol	ND	3000 ppm	0.5	1.5	±1.5 ppm	PASS
Pentane	ND	5000 ppm	0.2	0.5	±0.5 ppm	PASS
Propane	ND	5000 ppm	0.5	1.5	±1.5 ppm	PASS
Toluene	ND	890 ppm	0.3	0.9	±0.9 ppm	PASS
Xylenes	ND	2170 ppm	0.3	1.0	±1.0 ppm	PASS

Metals MSP-7.5.1.7

		limit	LOD	LOQ	error	result
Arsenic	ND	1500 ppb	8.0	23.9	±23.9 ppb	PASS
Cadmium	ND	500 ppb	8.6	25.7	±25.7 ppb	PASS
Lead	ND	500 ppb	13.4	40.1	±40.1 ppb	PASS
Mercury	ND	300 ppb	6.7	20.2	±20.2 ppb	PASS

These results are only valid for the samples tested. • Standards are used to calibrate the resulting data and estimate error using a standard estimate of error method; LOD is the limit of detection ($3.3s_i$), LOQ is the limit of quantification (3xLOD), and experimental error is calculated from weighing, dilution, and interpolation error using the formula $s_g^2 = \sum(\partial f/\partial i)^2 s_i^2$ where i is the contributor to error. The 95% confidence range is calculated from: (concentration) ± t_{CL90} x s_g. Sampling error is not considered in error calculations. ND = not detected (< LOD), NT = not tested, NL = no limit, NA = not applicable.

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QA Manager

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Pesticides MSP-7.5.1.8

		limit	LOD	LOQ	error	result
Abamectin	ND	0.30 ppm	0.004	0.013	±0.013 ppm	PASS
Acephate	ND	5.00 ppm	0.005	0.014	±0.014 ppm	PASS
Acequinocyl	ND	4.00 ppm	0.004	0.012	±0.012 ppm	PASS
Acetamiprid	ND	5.00 ppm	0.003	0.009	±0.009 ppm	PASS
Aldicarb	ND	0.00 ppm	0.001	0.004	±0.004 ppm	PASS
Azoxystrobin	ND	40.00 ppm	0.001	0.004	±0.004 ppm	PASS
Bifenazate	0.00 ppm	5.00 ppm	0.001	0.003	±0.003 ppm	PASS
Bifenthrin	ND	0.50 ppm	0.001	0.002	±0.002 ppm	PASS
Boscalid	ND	10.00 ppm	0.013	0.038	±0.038 ppm	PASS
Carbaryl	ND	0.50 ppm	0.005	0.015	±0.015 ppm	PASS
Carbofuran	ND	0.00 ppm	0.001	0.003	±0.003 ppm	PASS
Chloantraniliprole	ND	40.00 ppm	0.012	0.036	±0.036 ppm	PASS
Chlorfenapyr	ND	0.00 ppm	0.003	0.010	±0.010 ppm	PASS
Chlorpyrifos	ND	0.00 ppm	0.025	0.075	±0.075 ppm	PASS
Clofentezine	ND	0.50 ppm	0.005	0.014	±0.014 ppm	PASS
Coumaphos	ND	0.00 ppm	0.003	0.010	±0.010 ppm	PASS
Cyfluthrin	ND	1.00 ppm	0.005	0.014	±0.014 ppm	PASS
Cypermethrin	ND	1.00 ppm	0.003	0.010	±0.010 ppm	PASS
Daminozide	ND	0.00 ppm	0.017	0.051	±0.051 ppm	PASS
Dichlorvos	ND	0.00 ppm	0.009	0.026	±0.026 ppm	PASS
Diazinon	ND	0.20 ppm	0.001	0.002	±0.002 ppm	PASS
Dimethoate	ND	0.00 ppm	0.001	0.004	±0.004 ppm	PASS
Etoxazole	ND	1.50 ppm	0.002	0.007	±0.007 ppm	PASS
Fenoxycarb	ND	0.00 ppm	0.002	0.007	±0.007 ppm	PASS
Fenpyroximate	ND	2.00 ppm	0.001	0.002	±0.002 ppm	PASS
Fipronil	ND	0.00 ppm	0.005	0.014	±0.014 ppm	PASS
Flonicamid	ND	2.00 ppm	0.060	0.181	±0.181 ppm	PASS
Fludioxonil	ND	30.00 ppm	0.004	0.012	±0.012 ppm	PASS
Hexythiazox	ND	2.00 ppm	0.001	0.002	±0.002 ppm	PASS
Imazalil	ND	0.00 ppm	0.004	0.012	±0.012 ppm	PASS
Imidacloprid	ND	3.00 ppm	0.001	0.002	±0.002 ppm	PASS
Malathion	ND	5.00 ppm	0.003	0.009	±0.009 ppm	PASS
Metalaxyl	ND	15.00 ppm	0.005	0.014	±0.014 ppm	PASS
Methiocarb	ND	0.00 ppm	0.002	0.007	±0.007 ppm	PASS
Methomyl	ND	0.10 ppm	<0.001	0.001	±0.001 ppm	PASS
Methyl parathion	ND	0.00 ppm	0.001	0.002	±0.002 ppm	PASS
Mevinphos	ND	0.00 ppm	0.003	0.010	±0.010 ppm	PASS
Myclobutanil	ND	9.00 ppm	0.001	0.002	±0.002 ppm	PASS
Naled	ND	0.50 ppm	0.003	0.010	±0.010 ppm	PASS
Oxamyl	ND	0.20 ppm	0.001	0.004	±0.004 ppm	PASS
Paclobutrazol	ND	0.00 ppm	0.002	0.005	±0.005 ppm	PASS
Permethrin	ND	20.00 ppm	0.006	0.018	±0.018 ppm	PASS
Phosmet	ND	0.20 ppm	0.002	0.005	±0.005 ppm	PASS
Piperonylbutoxide	ND	8.00 ppm	0.006	0.019	±0.019 ppm	PASS
Prallethrin	ND	0.40 ppm	0.002	0.007	±0.007 ppm	PASS
Propiconazole	ND	20.00 ppm	0.002	0.007	±0.007 ppm	PASS
Propoxur	ND	0.00 ppm	0.003	0.010	±0.010 ppm	PASS
Pyrethrin	ND	1.00 ppm	0.002	0.005	±0.005 ppm	PASS
Pyridaben	ND	3.00 ppm	0.001	0.002	±0.002 ppm	PASS
Spinetoram	ND	3.00 ppm	0.002	0.006	±0.006 ppm	PASS
Spinosad	ND	3.00 ppm	0.004	0.012	±0.012 ppm	PASS
Spiromesifen	ND	12.00 ppm	0.002	0.006	±0.006 ppm	PASS
Spirotetramat	ND	13.00 ppm	0.001	0.004	±0.004 ppm	PASS
Spiroxamine	ND	0.00 ppm	0.001	0.002	±0.002 ppm	PASS
Tebuconazole	ND	2.00 ppm	0.003	0.009	±0.009 ppm	PASS
Thiacloprid	ND	0.10 ppm	0.001	0.002	±0.002 ppm	PASS
Thiamethoxam	ND	4.50 ppm	0.002	0.005	±0.005 ppm	PASS
Trifloxystrobin	ND	30.00 ppm	0.001	0.004	±0.004 ppm	PASS

ACCREDITED CERT #s 4961.01, 4961.02 & 4961.03

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