Certificate of Analysis

Analytical Test Report

Client:	Final Report	MCR-S21-68302 Rev.01.00	Laboratory:
Curaleaf Mass 30 Worcester Road Webster, MA 01570	Report Date:	12 NOVEMBER 2021	MCR Labs 85 Speen St. Lower Level Framingham, MA 01701 508-872-6666
	METRC Tag: **METRC Source Tag:**	**1A40A0100000E11000032885** **1A40A0100000E11000032613**	

Sample ID #	Sample Name	Batch	Matrix	Date Received	Date Tested	Sample Weight
MCR-S21-68302	CL,Popcorn,(S)Redline,,,Bulk	210916RL.F9-4-PR-D	Flower	5 November 2021	06-12 November 2021	7 g

The test results presented in this report are accurate, complete, and compliant with the MCR Labs quality control criteria.

Authorization

Carlos Cruz
Data Quality Manager

ACCREDITED
CERT# 6562.01

Case Narrative:

This sample was received by MCR Labs from a RMD agent in a sealed container. For cannabinoids, the sample was extracted using organic solvents and analyzed via High Performance Liquid Chromatography (HPLC-UV). For microbiological contaminants, the sample was prepared using cultured enrichments, was incubated for set periods of time, and analyzed via an automated Most Probable Number (MPN) methodology. For pathogenic bacterial contaminants, the sample was analyzed via a quantitative Polymerase Chain Reaction (qPCR). Pathogenic screen includes all six STEC stains, including O157. For mycotoxin and pesticide contaminants, the sample was extracted using organic solvents, and analyzed via Liquid Chromatography - Tandem Mass Spectrometry (LC-MS/MS). For heavy metals, the sample was extracted using nitric acid and microwave digestion, and analyzed via Inductively Coupled Plasma Mass Spectrometry (ICP-MS). The collected data was compared to data collected from analytical reference standards at known concentrations. Unless specified by regulation, measurement uncertainty is not taken into account when reporting results and making a statement of conformity. Values reported below quantitation limits are for informational purposes.

Requested Testing:

Test	Code	Procedure	Analytes Tested	Disposition
Cannabinoid Profile	CN	MCR-TM-0011	CBDVA, CBDV, CBDA, CBGA, CBG, CBD, THCV, THCVA, CBCV, CBN, CBNA, D9-THC, D8-THC, CBL, THCA, CBC, CBCA, CBLA, CBT	N/A
Microbiological Screen	MB	MCR-TM-0006 MCR-TM-0012	Bacterial (Total Aerobic, Total Coliform, Bile-Tolerant Gram Negative), Yeast and Mold, Pathogenic (E. coli, Salmonella)	Pass
Mycotoxin Screen	MY	MCR-TM-0009	Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2, Ochratoxin A	Pass
Heavy Metals Screen	HM	MCR-TM-0008	Arsenic (As), Cadmium (Cd), Lead (Pb), Mercury (Hg)	Pass
Pesticides Screen	PS	MCR-TM-0009	Bifenazate, Bifenthrin, Cyfluthrin, Etoxazole, Imazalil, Imidacloprid, Myclobutanil, Spiromesifen, Trifloxystrobin	Pass

Cannabinoid Profile [MCR-TM-0011] Analyst: DTR/JG/JM/TM *Test Date: 12 Nov 21*

The sample was analyzed for cannabinoids via High Performance Liquid Chromatography (HPLC-UV). The collected data was compared to data collected from certified analytical reference standards at known concentrations.

Table 1 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Cannabinoid Testing

Analyte	Cannabinoid	Conc. (weight %)	Conc. (mg/g)	LOQ (weight %)	LOD (weight %)
CBDVA	Cannabidivarinic acid	ND	ND	0.04%	0.01%
CBDV	Cannabidivarin	ND	ND	0.04%	0.01%
CBDA	Cannabidiolic acid	ND	ND	0.04%	0.01%
CBGA	Cannabigerolic acid	0.5%	5.0	0.04%	0.01%
CBG	Cannabigerol	0.1%	1.0	0.04%	0.02%
CBD	Cannabidiol	ND	ND	0.04%	0.01%
THCV	Tetrahydrocannabivarin	ND	ND	0.04%	0.01%
THCVA	Tetrahydrocannabivarinic acid	0.1%	1.0	0.04%	0.01%
CBCV	Cannabichromevarin	ND	ND	0.04%	0.01%
CBN	Cannabinol	ND	ND	0.04%	0.01%
CBNA	Cannabinolic acid	ND	ND	0.04%	0.01%
Δ9-THC	Δ9-Tetrahydrocannabinol	0.6%	6.0	0.04%	0.01%
Δ8-THC	Δ8-Tetrahydrocannabinol	ND	ND	0.04%	0.01%
CBL	Cannabicyclol	ND	ND	0.04%	0.01%
THCA	Tetrahydrocannabinolic acid	19.9%	199.0	0.04%	0.01%
CBC	Cannabichromene	ND	ND	0.04%	0.01%
CBCA	Cannabichromenic acid	0.2%	2.0	0.20%	0.02%
CBLA	Cannabicyclolic acid	ND	ND	0.04%	0.01%
CBT	Cannabicitran	ND	ND	0.04%	0.01%

Note: There are no limits established by the Massachusetts Department of Public Health for cannabinoid concentrations. ND = Not Detected. LOQ = Limit of Quantitation. LOD = Limit of Detection.

Microbiological Screen [MCR-TM-0006] *Analyst: JDM/VM* *Test Date: 06-09 Nov 21*

The sample was analyzed for microbiological contaminants via an automated Most Probable Number (MPN) methodology with cultured enrichments.

Table 2 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Microbiological Testing

Test ID	Test Analysis	Results	Unit	Limits	Disposition
21-68302-AC	Total Viable Aerobic Bacteria	<100	CFU/g	10^5 CFU/g	Pass
21-68302-YM	Total Yeast and Mold	<100	CFU/g	10^4 CFU/g	Pass
21-68302-CC	Total Coliforms	<100	CFU/g	10^3 CFU/g	Pass
21-68302-EB	Total Bile-Tolerant Gram Negative Bacteria	<100	CFU/g	10^3 CFU/g	Pass

Note: CFU = colony forming unit. Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 6.

Pathogenic Bacterial Screen [MCR-TM-0012] *Analyst: TJS* *Test Date: 10 Nov 21*

The sample was analyzed for pathogenic bacterial contamination via a quantitative Polymerase Chain Reaction (qPCR).

Table 3 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Pathogen Testing

Test ID	Test Analysis	Result	Units	Limits	Disposition
S21-68302-ECPT	*STEC*	Not Detected	N/A	Not Detected in 1g	Pass
S21-68302-SPT	*Salmonella*	Not Detected	N/A	Not Detected in 1g	Pass

Note: Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 6. NT = Not tested. STEC = Shiga Toxin producing E. coli

Mycotoxin Screen [MCR-TM-0009] Analyst: TW/TJS *Test Date: 10 Nov 21*

The sample was analyzed via Liquid Chromatography - Tandem Mass Spectrometry (LC-MS/MS).
The collected data was compared to data collected from analytical reference standards at known concentrations.

Table 4 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Mycotoxin Testing

Test ID	Test Analysis	Result	LOD (ppb)	LOQ (ppb)	Limits (ppb)	Disposition
S21-68302-AFB1	*Aflatoxin B1*	Not Detected	3.3	10	20	Pass
S21-68302-AFB2	*Aflatoxin B2*	Not Detected	3.3	10	20	Pass
S21-68302-AFG1	*Aflatoxin G1*	Not Detected	3.3	10	20	Pass
S21-68302-AFG2	*Aflatoxin G2*	Not Detected	3.3	10	20	Pass
S21-68302-OTA	*Ochratoxin A*	Not Detected	5	10	20	Pass

Note: ND = Not Detected; LOD = Limit of Detection; LOQ = Limit of Quantitation; ppb = part per billion. Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 6.

Heavy Metals Screen [MCR-TM-0008] Analyst: AI/PT *Test Date: 07 Nov 21*

The sample was analyzed via Inductively Coupled Plasma Mass Spectrometry. The collected data was compared to data collected from certified analytical reference standards at known concentrations.

Table 5 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Heavy Metal Testing

Test ID	Test Analysis	Result, ppb	LOD ppb	LOQ ppb	Limits ppb	Disposition	Limits (ingestion) ppb	Disposition (ingestion)
S21-68302-HM	Arsenic	ND	43.7	132.4	200	Pass	1500	Pass
S21-68302-HM	Cadmium	ND	25.1	76.0	200	Pass	500	Pass
S21-68302-HM	Mercury	ND	17.1	51.0	100	Pass	1500	Pass
S21-68302-HM	Lead	ND	27.1	82.0	500	Pass	1000	Pass

Note: ND = Not Detected; LOD = Limit of Detection; LOQ = Limit of Quantitation; BQL = Below Quantitation Limit; ppb = part per billion. Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 4.

Pesticides Screen [MCR-TM-0009] ***Analyst: TW/TJS*** *Test Date: 10 Nov 21*

The sample was analyzed via Liquid Chromatography - Tandem Mass Spectrometry (LC-MS/MS).
The collected data was compared to data collected from analytical reference standards at known concentrations.

Table 6 - S21-68302 CL,Popcorn,(S)Redline,,,Bulk 210916RL.F9-4-PR-D Flower Pesticide Testing

Test Analysis	Result, ppb	LOD ppb	LOQ ppb	Limits ppb	Disposition
Bifenazate	ND	125	375	750	Pass
Bifenthrin	ND	83.3	250	500	Pass
Cyfluthrin	ND	166.7	500	1000	Pass
Etoxazole	ND	58.3	175	350	Pass
Imazalil	ND	4.2	12.5	25	Pass
Imidacloprid	ND	50	150	300	Pass
Myclobutanil	ND	83.3	250	500	Pass
Spiromesifen	ND	333.3	1000	2000	Pass
Trifloxystrobin	ND	91.7	275	550	Pass

Note: ND = Not Detected; LOD = Limit of Detection; LOQ = Limit of Quantitation; ppb = part per billion; N/A = not available.
Testing limits established by the Massachusetts Department of Public Health, Protocol for Sampling and Analysis of Finished Medical Marijuana Products and Marijuana-Infused Products for Massachusetts Registered Medical Marijuana Dispensaries, Exhibit 5.

QA/QC

Cannabinoid Profile [MCR-TM-0011] *Analyst: KT* *Test Date: 12 Nov 21*

The sample data for certified reference standards was collected at known concentrations of cannabinoids in solution.

QC-0.025 mg/mL 19 cannabinoid multi-component 10/6/2021

ID	Cannabinoid	Nominal Prep Conc (mg/mL)	Measured Conc. (mg/mL)	Recovery (%)
CBDVA	Cannabidivarinic acid	0.025	0.025	100%
CBDV	Cannabidivarin	0.025	0.027	108%
CBDA	Cannabidiolic acid	0.025	0.025	100%
CBGA	Cannabigerolic acid	0.025	0.025	100%
CBG	Cannabigerol	0.025	0.025	100%
CBD	Cannabidiol	0.025	0.025	98%
THCV	Tetrahydrocannabivarin	0.025	0.027	106%
THCVA	Tetrahydrocannabivarinic acid	0.025	0.026	104%
CBCV	Cannabichromevarin	0.025	0.027	106%
CBN	Cannabinol	0.025	0.027	108%
CBNA	Cannabinolic acid	0.025	0.025	98%
Δ9-THC	Δ9-Tetrahydrocannabinol	0.025	0.026	104%
Δ8-THC	Δ8-Tetrahydrocannabinol	0.025	0.027	108%
CBL	Cannabicyclol	0.025	0.026	104%
THCA	Tetrahydrocannabinolic acid	0.025	0.026	104%
CBC	Cannabichromene	0.025	0.028	112%
CBCA	Cannabichromenic acid	0.025	0.025	100%
CBLA	Cannabicyclolic acid	0.025	0.026	104%
CBT	Cannabicitran	0.025	0.027	108%

Criteria for successful analysis is QC recovery to be ≤20% above or below nominal.

Microbiological Screen [MCR-TM-0006] Analyst: TM/VM/NM *Test Date: 05 Nov 21*

Quality control checks are performed to confirm that the equipment used for reading incubated microbiological cultures, which are done at various concentrations, are working correctly and that the fluorescence readings are accurate. QC checks are performed within 30 days of the recorded measurements.

Date of most recent QC check: Tempo2 QC 11/05/2021
Status: Pass

Pathogenic Bacterial Screen [MCR-TM-0012] ***Analyst: TJS*** *Test Date: 10 Nov 21*

Quality control checks are performed to validate the equipment used for reading incubated pathogenic bacterial cultures. QC checks are run with every analysis.

Date	QC Check	Pathogen	Result	Disposition
11/10/2021	Control (+)	*STEC*	Positive	Pass
11/10/2021	Control (-)	*STEC*	Negative	Pass
11/10/2021	Control (+)	*Salmonella*	Positive	Pass
11/10/2021	Control (-)	*Salmonella*	Negative	Pass

Mycotoxin Screen [MCR-TM-0009] ***Analyst: TW/TJS*** *Test Date: 10 Nov 21*

Solutions were spiked with toxin reference materials at given concentrations and tested for toxin presence.

QC Sample	Total Toxins (ng)	Result
Negative Control	0	Negative
Positive Control 20 ppb	20.0	Positive

Heavy Metals Screen [MCR-TM-0008] ***Analyst: AI/PT*** *Test Date: 07 Nov 21*

QC samples were prepared at target concentrations and injected at the end of the sequence.

Analyte	Prepared analyte concentration, ppb	Analyte measured, ppb	QC recovery (%)
Arsenic (As)	1.00	1.02	102%
Cadmium (Cd)	1.00	1	100%
Mercury (Hg)	0.50	0.51	102%
Lead (Pb)	3.00	2.91	97%

Criteria for successful analysis is QC recovery to be ≤20% above or below nominal.

Pesticides Screen [MCR-TM-0009] ***Analyst: TW/TJS*** *Test Date: 10 Nov 21*

QC samples were prepared at target concentrations and injected at the end of the sequence.

Test Analysis	Prepared analyte concentration, ppb	Result
Bifenazate	750	Detected
Bifenthrin	500	Detected
Cyfluthrin	1000	Detected
Etoxazole	350	Detected
Imazalil	25	Detected
Imidacloprid	300	Detected
Myclobutanil	500	Detected
Spiromesifen	2000	Detected
Trifloxystrobin	550	Detected

END OF REPORT