Certificate of Analysis

Analytical Test Report

Client:	Final Report	MCR-S21-25747 Rev.01.00	Laboratory:
Hudson Botanicals Processing LLC 9 Kane Industrial Dr. Hudson, MA 01749	Report Date:	29 APRIL 2021	MCR Labs 85 Speen St. Lower Level Framingham, MA 01701 508-872-6666
	METRC Tag:	**1A40A0300003715000002150**	
	METRC Source Tag:	**1A40A0300003715000002136**	

Sample ID #	Sample Name	Batch	Matrix	Date Received	Date Tested	Sample Weight
MCR-S21-25747	Vape	TD-001	Vape	22 April 2021	23-26 April 2021	3.5 g

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

Authorization

Andy Moy
Data Manager

ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17025
TESTING LABORATORY

This test is accredited under the laboratory's ISO/IEC 17025:2017 accreditation issued by ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1853

Case Narrative:

This sample was recieved 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 contaminants, the sample was extracted using organic solvents, and analyzed via Liquid Chromatography - Tandem Mass Spectrometry (LC-MS/MS). Mycotoxin was performed using validated but not yet accredited method. For heavy metals, the sample was extracted using nitric acid and microwave digestion, and analyzed via Inductively Coupled Plasma Mass Spectrometry (ICP-MS). For volatile organic compounds, the sample was analyzed via Gas Chromatography – Flame Ionization Detection with Headspace Autosampler (GC-FID) using full evaporative technique. For vitamin E acetate, the sample was extracted using organic solvents and analyzed via High Performance Liquid Chromatography (HPLC-UV). The collected data was compared to data collected from analytical reference standards at known concentrations.Quantification of heptane is undergoing method development. 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-0013	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
Volatile Organics Screen	VC	MCR-TM-0007	Heptane	Pass
Vitamin E Acetate	VEA	MCR-TM-0014	Vitamin E Acetate	N/A

Cannabinoid Profile [MCR-TM-0011] Analyst: DW/JM/JC *Test Date: 24 Apr 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 - S21-25747 Vape TD-001 Vape Cannabinoid Testing

Analyte	Cannabinoid	Conc. (weight %)	Conc. (mg/g)	LOQ (weight %)	LOD (weight %)
CBDVA	Cannabidivarinic acid	ND	ND	0.10%	0.01%
CBDV	Cannabidivarin	ND	ND	0.10%	0.02%
CBDA	Cannabidiolic acid	ND	ND	0.10%	0.02%
CBGA	Cannabigerolic acid	ND	ND	0.10%	0.02%
CBG	Cannabigerol	2.8%	28.0	0.10%	0.04%
CBD	Cannabidiol	0.3%	3.0	0.10%	0.03%
THCV	Tetrahydrocannabivarin	3.2%	32.0	0.10%	0.01%
THCVA	Tetrahydrocannabivarinic acid	ND	ND	0.10%	0.03%
CBCV	Cannabichromevarin	ND	ND	0.10%	0.01%
CBN	Cannabinol	0.4%	4.0	0.10%	0.01%
CBNA	Cannabinolic acid	ND	ND	0.10%	0.01%
Δ9-THC	Δ9-Tetrahydrocannabinol	74.2%	742.0	0.10%	0.02%
Δ8-THC	Δ8-Tetrahydrocannabinol	ND	ND	0.10%	0.02%
CBL	Cannabicyclol	ND	ND	0.10%	0.02%
THCA	Tetrahydrocannabinolic acid	ND	ND	0.10%	0.01%
CBC	Cannabichromene	ND	ND	0.10%	0.01%
CBCA	Cannabichromenic acid	ND	ND	0.50%	0.05%
CBLA	Cannabicyclolic acid	ND	ND	0.10%	0.01%
CBT	Cannabicitran	3.1%	31.0	0.10%	0.02%

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: HK/TM* *Test Date: 23-26 Apr 21*

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

Table 2 - S21-25747 Vape TD-001 Vape Microbiological Testing

Test ID	Test Analysis	Results	Unit	Limits	Disposition
21-25747-AC	Total Viable Aerobic Bacteria	<100	CFU/g	10^4 CFU/g	Pass
21-25747-YM	Total Yeast and Mold	<100	CFU/g	10^3 CFU/g	Pass
21-25747-CC	Total Coliforms	<100	CFU/g	10^2 CFU/g	Pass
21-25747-EB	Total Bile-Tolerant Gram Negative Bacteria	<100	CFU/g	10^2 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: JT/AL* *Test Date: 26 Apr 21*

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

Table 3 - S21-25747 Vape TD-001 Vape Pathogen Testing

Test ID	Test Analysis	Result	Units	Limits	Disposition
S21-25747-ECPT	*STEC*	Not Detected	N/A	Not Detected in 1g	Pass
S21-25747-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-0013] Analyst: HK/SW/TJS *Test Date: 25 Apr 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 - S21-25747 Vape TD-001 Vape Mycotoxin Testing

Test ID	Test Analysis	Result	LOD (ppb)	LOQ (ppb)	Limits (ppb)	Disposition
S21-25747-MY	*Mycotoxin*	Not Detected	4	12	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: NM/EK *Test Date: 23 Apr 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 - S21-25747 Vape TD-001 Vape Heavy Metal Testing

Test ID	Test Analysis	Result, ppb	LOD ppb	LOQ ppb	Limits ppb	Disposition	Limits (ingestion) ppb	Disposition (ingestion)
S21-25747-HM	Arsenic	ND	41.6	126.0	200	Pass	1500	Pass
S21-25747-HM	Cadmium	ND	60.3	182.7	200	Pass	500	Pass
S21-25747-HM	Mercury	ND	30.0	90.9	100	Pass	1500	Pass
S21-25747-HM	Lead	ND	21.5	65.3	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.

VC Screen [PCR-TM-0004] ***Analyst: HK/JE*** *Test Date: 23 Apr 21*

The sample was analyzed via Gas Chromatography – Flame Ionization Detection with Headspace Autosampler. The collected data was compared to data collected from certified analytical reference standards at known concentrations. Quantification of heptane is undergoing method development.

Table 6 - S21-25747 Vape TD-001 Vape Residual Solvent Testing

Test ID	Analyte	Result (ppm)	LOD (ppm)	LOQ (ppm)	Limits (ppm)	*USP Result (ppm)	Disposition
S21-25747-VC	Heptane	ND	0.7	2.3	5000	ND	Pass

Note: ND = Not Detected; LOD = Limit of Detection; LOQ = Limit of Quantitation; BQL = Below Quantitation Limit; ppm = part per million. 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 7. The uncertainty budget for propane is 0.12 ppm; n-Butane - 0.10 ppm; Ethanol - 0.15 ppm. *USP 34 General Notices 7.20.

Vitamin E Acetate Screen [MCR-TM-0014] *Analyst: JM/JC* *Test Date: 24 Apr 21*

The sample was analyzed via High Performance Liquid Chromatography (HPLC-UV).

Table 7 - S21-25747 Vape TD-001 Vape Vitamin E Acetate Testing

Test ID	Test Analysis	Result (weight %)	LOD (weight %)	LOQ (weight %)
S21-25747-VEA	Vitamin E Acetate	ND	0.4	1.4

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

QA/QC

Cannabinoid Profile [MCR-TM-0011] *Analyst: AL* *Test Date: 24 Apr 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 4/5/2021

ID	Cannabinoid	Nominal Prep Conc (mg/mL)	Measured Conc. (mg/mL)	Recovery (%)
CBDVA	Cannabidivarinic acid	0.025	0.023	90%
CBDV	Cannabidivarin	0.025	0.022	88%
CBDA	Cannabidiolic acid	0.025	0.023	92%
CBGA	Cannabigerolic acid	0.025	0.023	90%
CBG	Cannabigerol	0.025	0.023	90%
CBD	Cannabidiol	0.025	0.023	90%
THCV	Tetrahydrocannabivarin	0.025	0.024	94%
THCVA	Tetrahydrocannabivarinic acid	0.025	0.023	92%
CBCV	Cannabichromevarin	0.025	0.022	88%
CBN	Cannabinol	0.025	0.022	88%
CBNA	Cannabinolic acid	0.025	0.023	92%
Δ9-THC	Δ9-Tetrahydrocannabinol	0.025	0.025	100%
Δ8-THC	Δ8-Tetrahydrocannabinol	0.025	0.023	92%
CBL	Cannabicyclol	0.025	0.024	94%
THCA	Tetrahydrocannabinolic acid	0.025	0.023	90%
CBC	Cannabichromene	0.025	0.023	92%
CBCA	Cannabichromenic acid	0.025	0.023	90%
CBLA	Cannabicyclolic acid	0.025	0.024	96%
CBT	Cannabicitran	0.025	0.024	96%

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

Microbiological Screen [MCR-TM-0006] Analyst: DW *Test Date: 01 Apr 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: Tempo QC 04/01/2021
Status: Pass

Pathogenic Bacterial Screen [MCR-TM-0012] ***Analyst: JT/AL*** *Test Date: 26 Apr 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
4/26/2021	Control (+)	*STEC*	Positive	Pass
4/26/2021	Control (-)	*STEC*	Negative	Pass
4/26/2021	Control (+)	*Salmonella*	Positive	Pass
4/26/2021	Control (-)	*Salmonella*	Negative	Pass

Mycotoxin Screen [MCR-TM-0013] ***Analyst: HK/SW/TJS*** *Test Date: 25 Apr 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 5 ppb	5.0	Positive

Heavy Metals Screen [MCR-TM-0008] ***Analyst: NM/EK*** *Test Date: 23 Apr 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	0.94	94%
Cadmium (Cd)	1.00	0.98	98%
Mercury (Hg)	0.50	0.43	86%
Lead (Pb)	3.00	2.81	94%

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

VC Screen [MCR-TM-0007] ***Analyst: JE*** *Test Date: 23 Apr 21*

A QC sample was prepared at a known concentration and injected.

Analyte	µg analyte detected	Nominal analyte, µg	Recovery
Hexane	4.4	5	88%

Criteria for successful analysis is QC recovery to be ≤30% above or below nominal.

Vitamin E Acetate Screen [MCR-TM-0014] ***Analyst: KT*** *Test Date: 24 Apr 21*

The sample data for reference standards was collected for a known concentration of Vitamin E Acetate in solution.

Analyte	Nominal Prep Conc (mg/mL)	Measured Conc. (mg/mL)	QC recovery (%)
Vitamin E Acetate	0.125	0.127	102%

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

END OF REPORT