REVIEWED
By Tamara Salazar at 1:02 pm, Jan 28, 2022

1/27/2022

Worklist: 5547

LAB_CASE	ITEM	ITEM_TYPE	DESCRIPTION
M2021-4509	5	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
M2021-5427	3	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
M2021-5672	4	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
M2022-0018	4	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
M2022-0061	2	BCK	AM 27 Blood THC Quant by LC-QQQ
P2021-4247	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
P2021-4247	2	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
P2022-0051	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2022-0052	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2022-0053	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2022-0058	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2022-0071	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ
P2022-0087	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2022-0088	1	BCK	AM 27 Blood THC Quant by LC-QQQ

AM# 27: Quantitation of THC and Metabolites in Blood and Urine by LC-MS/MS

Extraction Date: 01/14/2022 and 1/25/2022
Plate lot#: 211018
Mobile phase A: 0.1% Formic Acid in LCMS Water
Blank Blood Lot: Lampire 20L20725
LCMS-QQQ ID: 069901

Analyst: Celena Shrum
Plate Retest Date: 04/18/2022
Mobile phase B: 0.1% Formic acid in Acetonitrile
Column: UCT Selectra DA 100 x 2.1mm 3um
Blank Urine Lot: POC031319

Pre-Analytic:

☒ 1. Check levels of mobile phases and needle wash refill as needed. Ensure waste is not full.
☒ 2. Ensure correct column is installed and begin mobile phase flow allow to equilibrate ~ 30 minutes.

Analytic:

☒ 1. Remove standards, plate, controls, and samples from cold storage. Allow to reach room temperature.
☒ 2. Using a calibrated pipette, add **1000µl blood and urine (if applicable) (calibrated pipette)** into the appropriate wells of analytical (standards) plate. **Pipette ID: #42**
☒ 3. Place on shaking incubator at ambient temp., 900rpm for 15 minutes.
☒ 4. Pipette **500µL 0.1% formic acid in water blood sample** of analytical plate.
☒ 5. Place on shaking incubator at ambient temp., 900rpm for 15 minutes.
☒ 6. Transfer **800µL of blood+acid or urine+acid** mixture to corresponding wells of SLE+ plate.
☒ 7. Apply positive pressure for approx. 10-15 seconds (or until no liquid remains on top of sorbent). ***(Load at 85-100 PSI- Selector to the right)***
☒ 8. Wait 5 minutes.
☒ 9. Add **2.25mL MTBE. (*Add in 3 increments of 750uL)***
☒ 10. Wait 5 minutes.
☒ 11. Apply positive pressure for approx. 15 seconds. ***(10-15 PSI- Selector to the left).***
☒ 12. Add **2.25mL Hexane. (*Add in 3 increments of 750uL)***
☒ 13. Wait 5 minutes.
☒ 14. Apply positive pressure for approx. 15 seconds. ***(10-15 PSI- Selector to the left).***
☒ 15. Remove plate containing eluate. Place on SPE Dry and evaporate to dryness at approx. 35°C.
☒ 16. Reconstitute in **100µL 100% MeOH** and heat seal plate with foil. Place in autosampler and run worklist.

Post-Analytic

☒ 1. Create batch and process data.
☒ 2. Make any necessary integration changes, Curve weighting of Linear 1/x with r^2 values ≥0.98 for each analyte
☒ 3. RT +/- 3% or 0.100 min, whichever is greater, +/- 20% Accuracy for greater than (+/- 30% for 10ng/ml or less). Ion ratios must be within +/- 20% of the averaged calibrators
☒ 4. Case sample response for THC 1ng/mL and OH-THC 3ng/mL (quantitative), Carboxy-THC: 5ng/mL (qualitative only) will be reported. Samples with a THC or OH-THC response over 50 ng/mL will be reported out as greater than 50 ng/mL.
☒ 5. Did all QCs pass for each analyte? (if not, describe in comments section)
☒ 6 Enter QCs into control charting.
☒ 7 Central File Packet to include: LIMS Worklist, Method Checklist, Calibration and Control Reports

COMMENTS: The samples were extracted on 1/14/22 but the data was not evaluated as the wrong sequence was used and blanks were not included between the samples. The samples were not able to be reinjected with the correct sequence as this was not seen until after the 7-day injection timeframe. The samples were re-extracted on 1/25/22.

THC-OH not evaluated. Only THC-COOH evaluated for urine samples.

	1	2	3	4	5	6
a	cal 1ng	QC 2	P2022-0088-1			
b	cal 3 ng	NEG Blood	NEG Urine			
c	cal 5 ng	M2022-0061-2	M2021-4509-5			
d	cal 10ng	P2022-0051-1	M2021-5427-3			
e	cal 25 ng	P2022-0052-1	M2021-5672-4			
f	cal 50 ng	P2022-0053-1	M2022-0018-4			
g	cal 100 ng	P2022-0058-1	P2021-4247-1			
h	QC 1	P2022-0087-1	P2022-0071-1			

IDAHO STATE POLICE

MEMORANDUM

DATE: 3/3/2022

TO: Toxicology Discipline/ Jason Crowe

FROM: Celena Shrum- Toxicology Discipline lead

SUBJECT: Use of internal control in lieu of external control

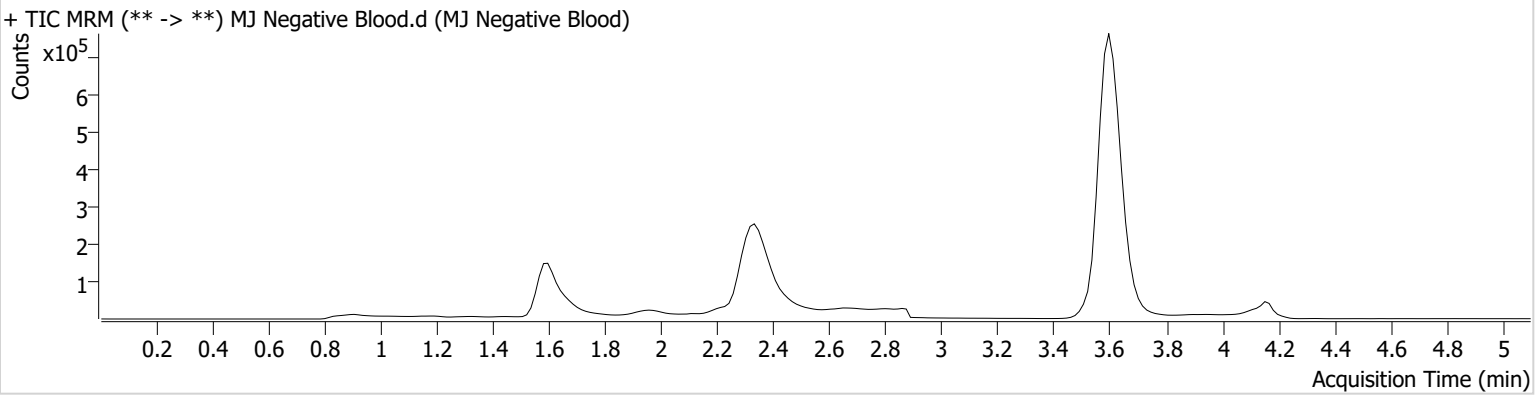
Toxicology Analytical Methods #25, 26, and 27 specify that if a run contains urine samples, a negative control and **external** urine control must also be included in the run. The purpose of this control is to demonstrate that the extraction worked as intended and to ensure that the results and concentrations obtained are accurate. It was decided in October 2021 that extra QC's would be included on the analytical plates so that they could be used as an internal control for runs with urine cases instead of continuing with including an external control. An internal control serves the same purpose as an external control but is prepared and placed on the analytical plate rather than being prepared in-house and placed on the plate at the time of testing. Utilizing internal controls versus external increases the efficacy of the controls used by ensuring consistent spiking and preparation, eliminating evaporation of compounds, etc. There is no quality issue with any of the cases, since an additional urine control was used that served the same purpose as the external control, but it was a violation of the wording specified in the method.

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Negative Blood.d
Type	Sample	**Sample**	MJ Negative Blood
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-B2	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 1:07:10 PM		
Sample Info.			

Sample Chromatogram

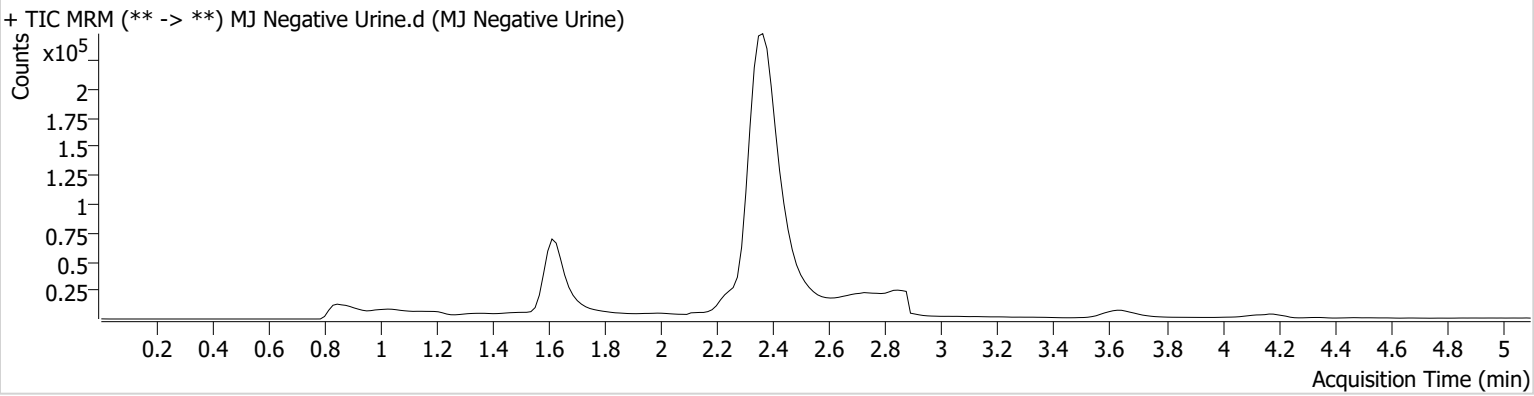


AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Negative Urine.d
Type	Sample	**Sample**	MJ Negative Urine
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-B3	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 3:08:57 PM		
Sample Info.			

Sample Chromatogram

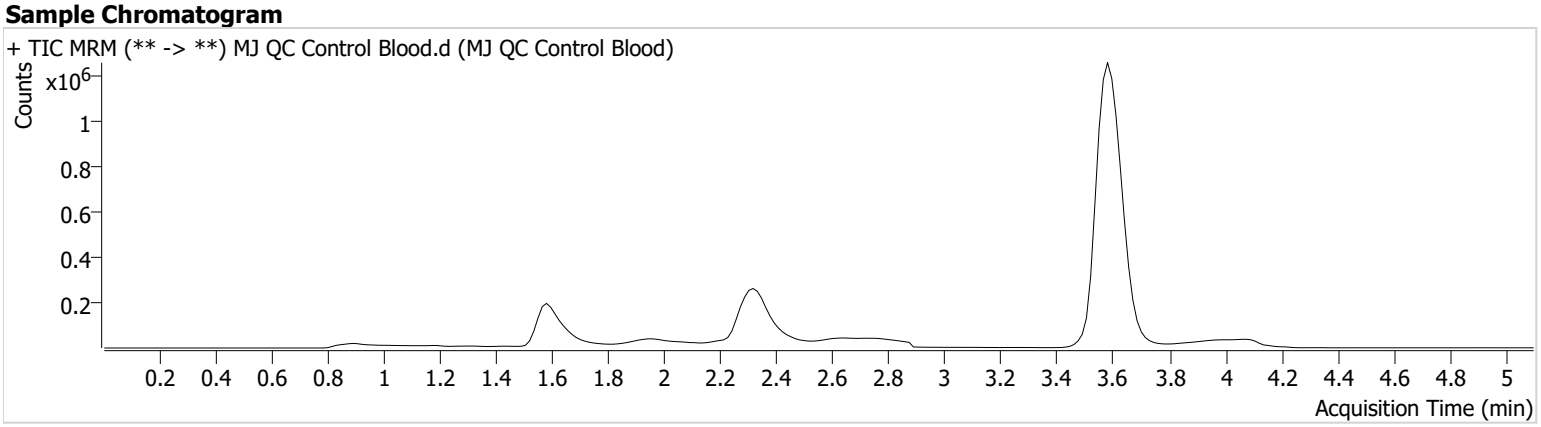


AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ QC Control Blood.d
Type	Cal	**Sample**	MJ QC Control Blood
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-H1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:51:56 PM		
Sample Info.			

Sample Chromatogram



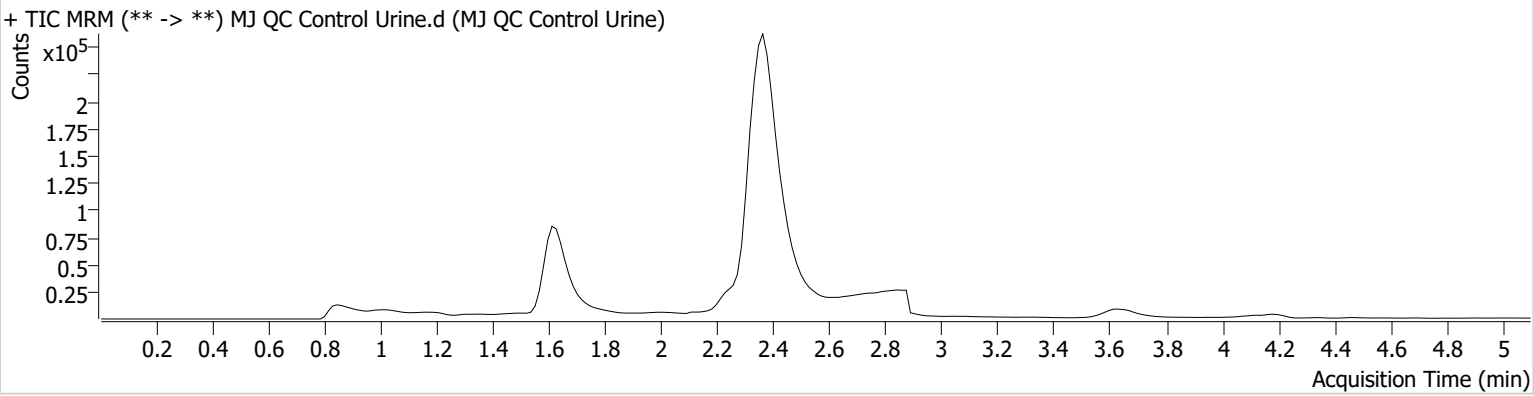
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.625	60498	∞	67.9	∞	192323	16.5880	ng/ml
THC	3.601	313284	∞	26.4	∞	7461091	4.6208	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ QC Control Urine.d
Type	QC	**Sample**	MJ QC Control Urine
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-A2	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 3:16:34 PM		
Sample Info.			

Sample Chromatogram



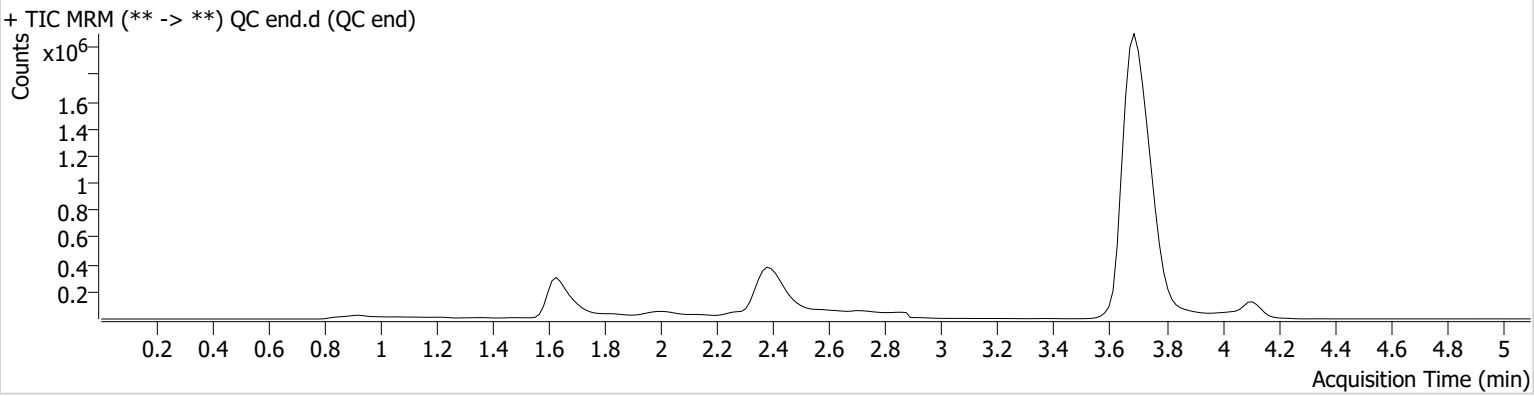
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.655	32786	∞	64.8	124.89	94319	18.1166	ng/ml
THC	3.661	2317	9.62 **Low**	86.9 **High**	∞	57571	4.4391	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	QC end.d
Type	Sample	**Sample**	QC end
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-H1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 5:07:52 PM		
Sample Info.			

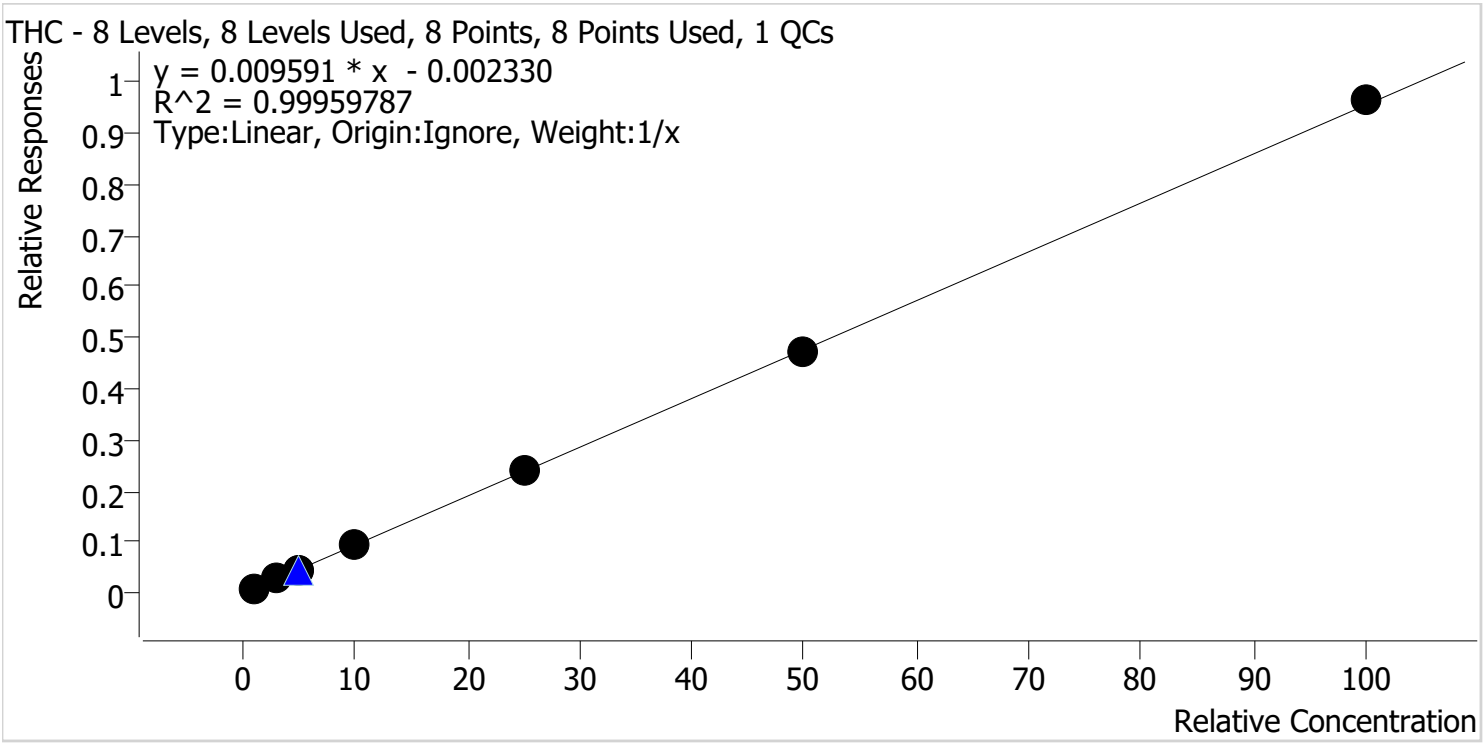
Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.670	86947	∞	63.9	926.27	250016	18.1239	ng/ml
THC	3.706	597481	6030.52	23.3	413.63	13264268	4.9394	ng/ml

AM #27 Cannabinoids Quant. Calibration Curve Report

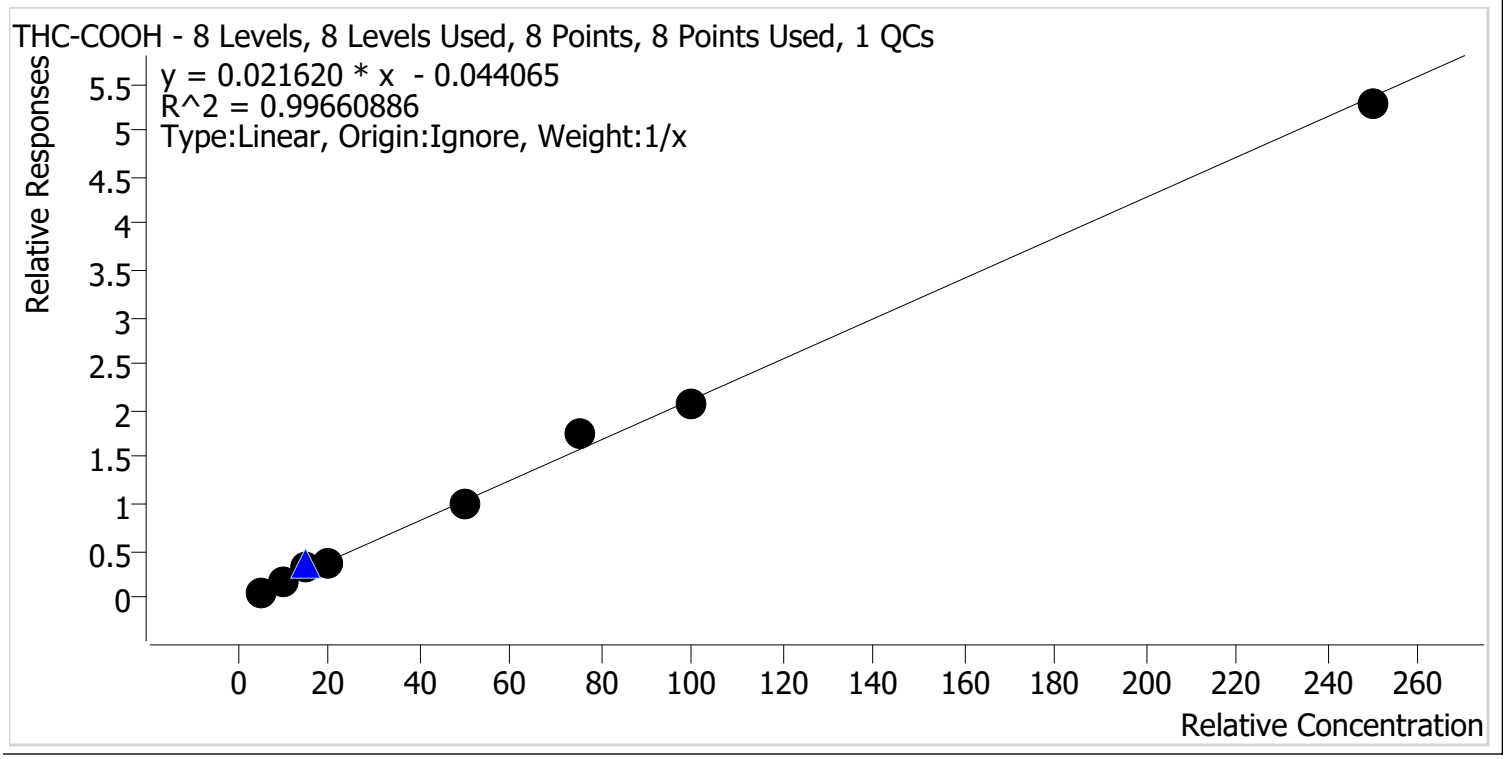
Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Last Cal. Update	1/27/2022 3:00 PM
Analyst Name	ISP\datastor
Analyte	THC
Internal Standard	THC-D3



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ Cal 1	1	✔	1.0	1.1	113.6
MJ Cal 2	2	✔	3.0	3.0	99.0
MJ Cal 3	3	✔	5.0	4.8	96.7
MJ Cal 4	4	✔	10.0	9.8	98.3
MJ Cal 5	5	✔	25.0	24.9	99.6
MJ Cal 6	6	✔	50.0	49.8	99.5
MJ Cal 7	7	✔	100.0	101.0	101.0
MJ QC Control Blood	QC	✔	5.0	4.6	92.4

AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Last Cal. Update	1/27/2022 3:00 PM
Analyst Name	ISP\datastor
Analyte	THC-COOH
Internal Standard	THC-COOH-D9



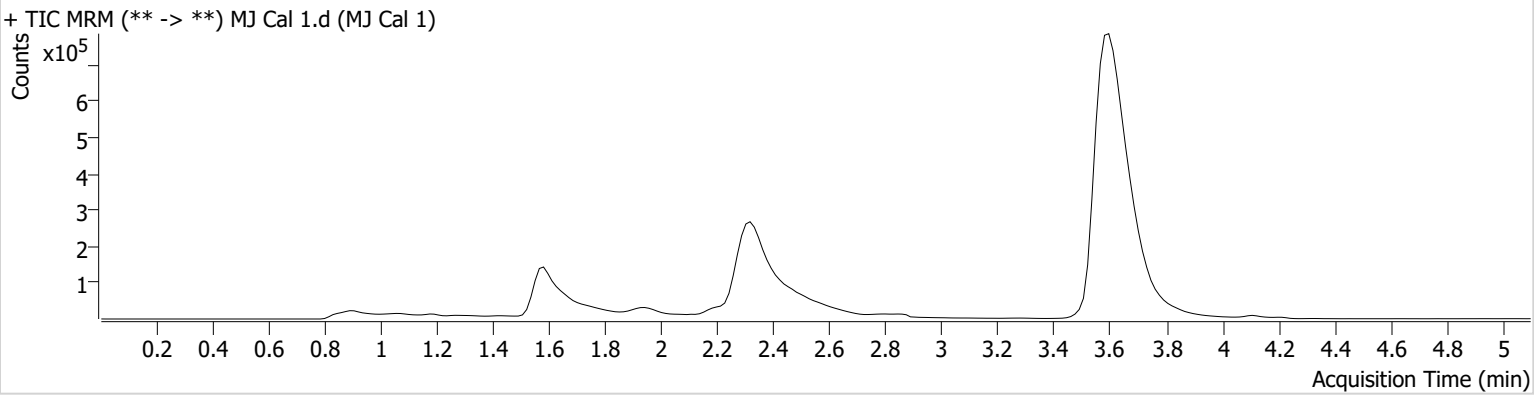
Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ Cal 1	1	✔	5.0	4.5	89.1
MJ Cal 2	2	✔	10.0	10.1	101.3
MJ Cal 3	3	✔	20.0	19.4	96.8
MJ Cal 4	4	✔	50.0	47.7	95.4
MJ Cal 5	5	✔	75.0	83.0	110.6
MJ Cal 6	6	✔	100.0	97.7	97.7
MJ Cal 7	7	✔	250.0	246.1	98.4
MJ QC Control Blood	QC	✔	15.0	16.6	110.6

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 1.d
Type	Cal	**Sample**	MJ Cal 1
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-A1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 11:58:30 AM		
Sample Info.			

Sample Chromatogram



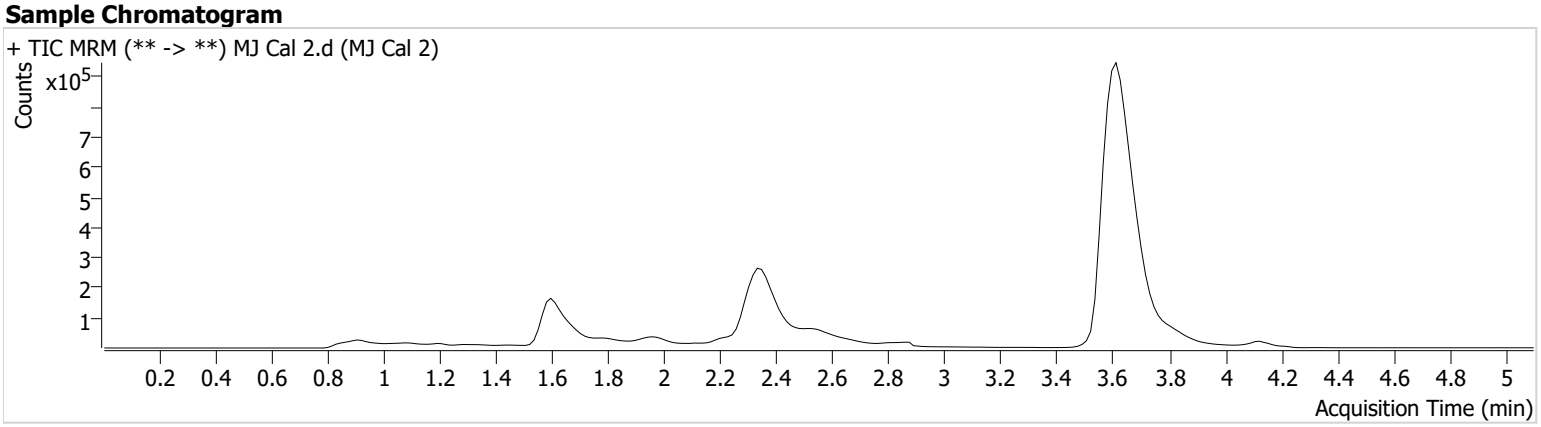
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.610	9970	14.57	109.7 **High**	∞	190622	4.4573	ng/ml **Low**
THC	3.601	54699	∞	31.6	∞	6388757	1.1356	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 2.d
Type	Cal	**Sample**	MJ Cal 2
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-B1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:06:16 PM		
Sample Info.			

Sample Chromatogram



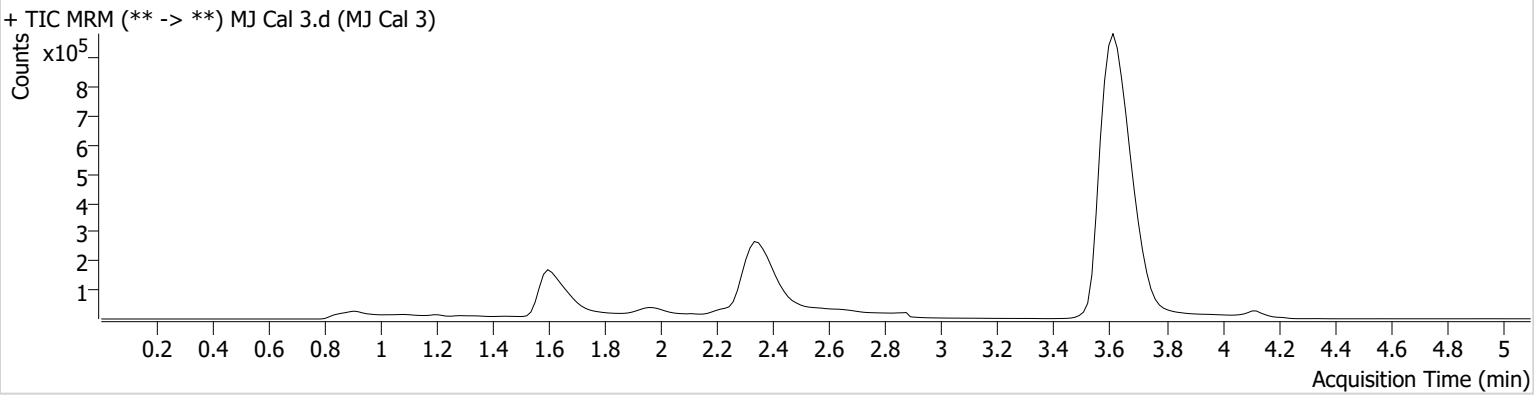
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.625	27833	∞	79.3	∞	159061	10.1319	ng/ml
THC	3.631	186025	∞	27.4	∞	7115639	2.9687	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 3.d
Type	Cal	**Sample**	MJ Cal 3
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-C1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:13:52 PM		
Sample Info.			

Sample Chromatogram



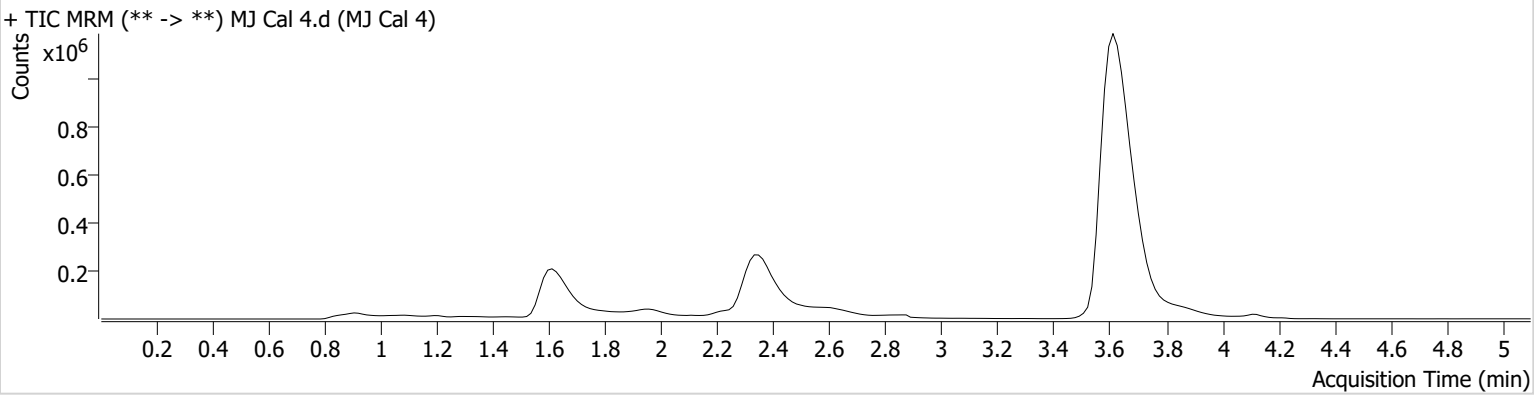
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.640	66695	∞	68.5	∞	178151	19.3545	ng/ml
THC	3.631	310940	∞	26.1	∞	7060750	4.8345	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 4.d
Type	Cal	**Sample**	MJ Cal 4
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-D1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:21:27 PM		
Sample Info.			

Sample Chromatogram



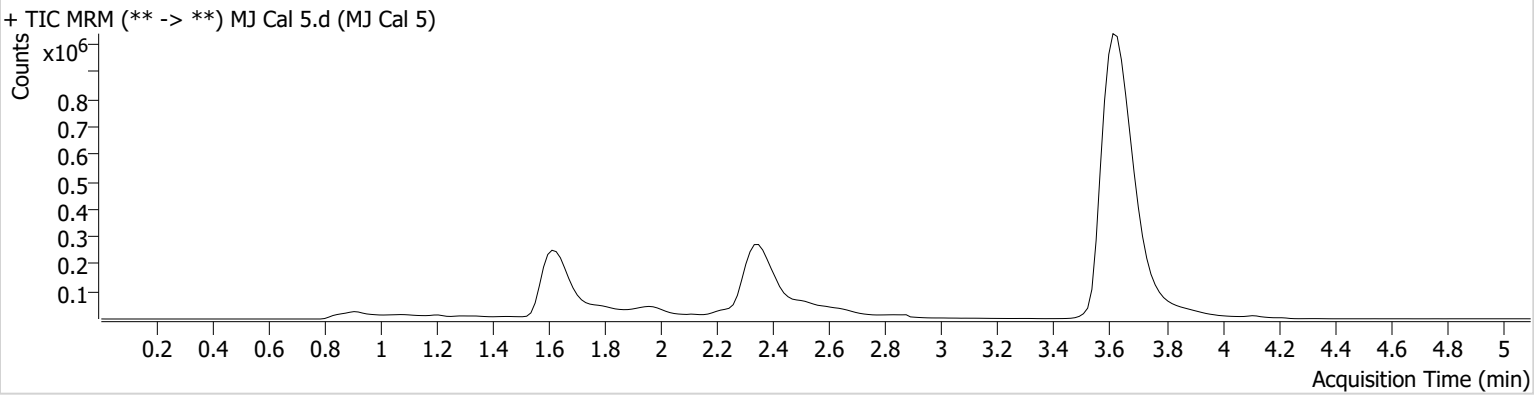
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.640	189002	∞	64.2	∞	191462	47.6979	ng/ml
THC	3.631	743603	∞	25.3	∞	8085336	9.8320	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 5.d
Type	Cal	**Sample**	MJ Cal 5
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-E1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:29:03 PM		
Sample Info.			

Sample Chromatogram



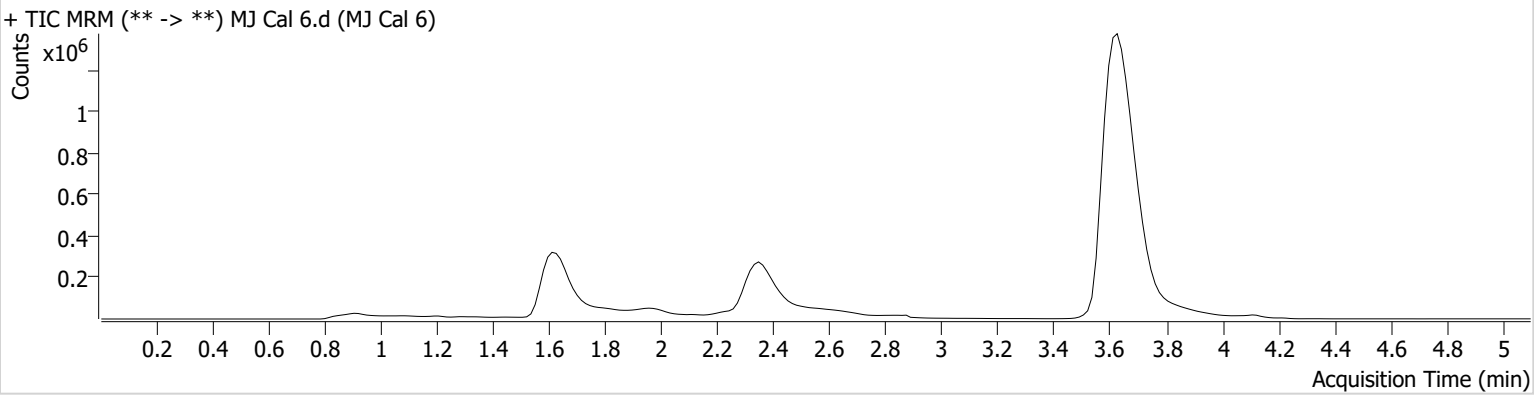
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.640	284149	∞	63.5	∞	162388	82.9742	ng/ml
THC	3.631	1479515	∞	25.2	∞	6256527	24.8988	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 6.d
Type	Cal	**Sample**	MJ Cal 6
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-F1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:36:39 PM		
Sample Info.			

Sample Chromatogram



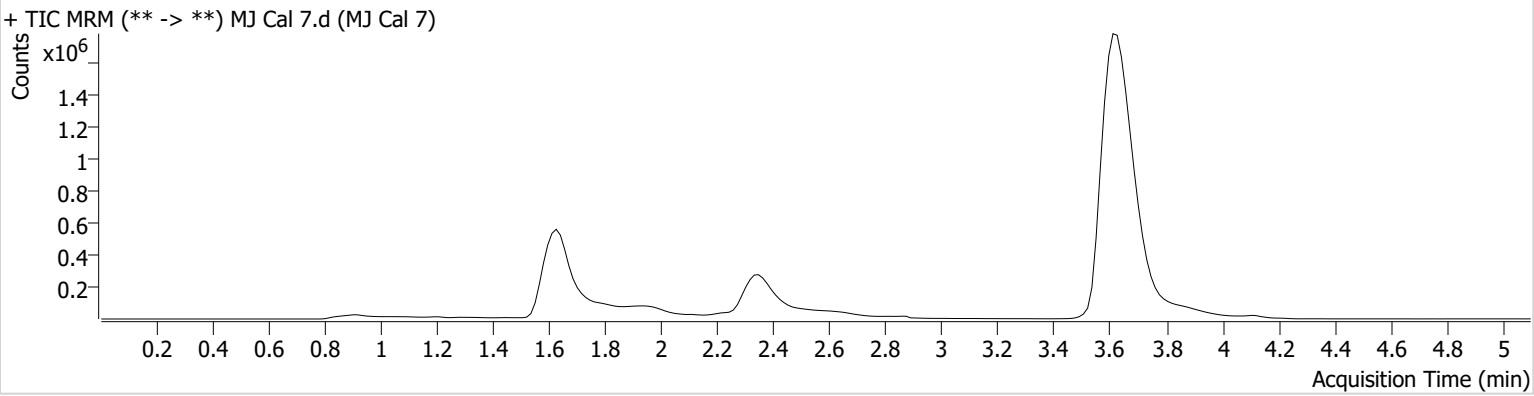
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.640	393962	∞	62.5	∞	190457	97.7152	ng/ml
THC	3.631	3246535	∞	25.7	∞	6836833	49.7537	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2022\AM 27-28\1-25-22 AM 27 28 Combo Run CS\QuantResults\AM 27 THC and Carboxy-THC only.batch.bin
Calibration Last Update	1/27/2022 3:00:17 PM

Instrument	Falco (069901)	**Data File**	MJ Cal 7.d
Type	Cal	**Sample**	MJ Cal 7
Acq. Method	AM 27 THCQ.m	**Operator**	Celena Shrum
Sample Position	P5-G1	**Comment**	
Injection Volume	10		
Acq. Date-Time	1/25/2022 12:44:14 PM		
Sample Info.			

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.640	982737	∞	61.2	∞	186261	246.0810	ng/ml
THC	3.631	6148383	∞	25.8	∞	6365163	100.9560	ng/ml