



REVIEWED

By Tamara Salazar at 12:28 pm, Jun 24, 2021

6/22/2021

Worklist: 5061

<u>LAB CASE</u>	<u>ITEM</u>	<u>ITEM TYPE</u>	<u>DESCRIPTION</u>	
M2021-2350	5	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2021-1860	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	

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

Extraction Date: 6/16/2021

Analyst: Amber Gerheart

Plate lot#: 210412

Plate Retest Date: 10/12/2021

Mobile phase A: 0.1% Formic Acid in LCMS Water

Mobile phase B: 0.1% Formic acid in Acetonitrile

Blank Blood Lot: 20L20723

Column: UCT Selectra DA 100 x 2.1mm 3um

LCMS-QQQ ID: 069901

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. Urine hydrolysis: add 1.5mL urine to blank plate, add 250µl 1N KOH. Shake and incubate at 40 degrees for 15 minutes. 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, 500 µL saturated phosphate buffer in urine** in wells of analytical plate.
- 5. Place on shaking incubator at ambient temp., 900rpm for 15 minutes.
- 6. Transfer **700-800µL of blood+acid or urine+acid** mixture to corresponding wells of SLE+ plate. Amount transferred: 800 µL
- 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 samples with calculated concentrations for THC at 1ng/mL or greater and OH-THC at 3ng/mL or greater may be reported quantitatively (blood only). Calculated concentrations for carboxy-THC of 5ng/mL may be reported qualitatively. 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: *THC-OH not evaluated.*

	1	2	3	4	5	6
A	IS + Cal. 1	Blood Negative	IS + Sample	IS + Sample	IS + Sample	IS + QC_1
B	IS + Cal. 2	Urine Negative	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 7
C	IS + Cal. 3	Urine External	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 6
D	IS + Cal. 4	M2021-2350-5	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 5
E	IS + Cal. 5	P2021-1860-1	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 4
F	IS + Cal. 6	IS + Sample	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 3
G	IS + Cal. 7	IS + Sample	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 2
H	IS + QC_1	IS + Sample	IS + Sample	IS + Sample	IS + Sample	IS + Cal. 1

All wells to contain 100 µl of residual DMSO

AA



Idaho State Police Forensic Services

AM #26 Screening of THC and Metabolites and AM #27 Confirmation of THC and Metabolites Urine External Control Prep Sheet

Methanol External Control Solution (Lot: WS03052021)

10 µL of 1mg/mL THC, 100 µL of 100 µg/mL THC-OH, C-THC in 9790 µL MeOH

Approximate concentration 1ug/mL.

<i>Component</i>	<i>Source</i>	<i>Source Lot Number</i>	<i>Expiration Date</i>
Methanol (LCMS)	Fisher	200921	
THC	Cerilliant	FE01041701	03/31/2022
C-THC	Cerilliant	FE08011801	08/31/2023
THC-OH	Cerilliant	FE07221601	07/31/2021
Prepared:	03/05/2021		
Prepared By:	Tamara Salazar/Amber Gerheart		

Urine External Control Solution (Lot: 06152021)

200 ul of methanol external control solution was added to 9800 ul of urine.

Approximately 20ng/mL each

<i>Component</i>	<i>Source</i>	<i>Source Lot Number</i>
Negative Urine	Pocatello Lab	POC031319
Methanol External Control Solution	-	WS03052021
Prepared:	06/15/2021	
Prepared by:	Amber Gerheart	

AG

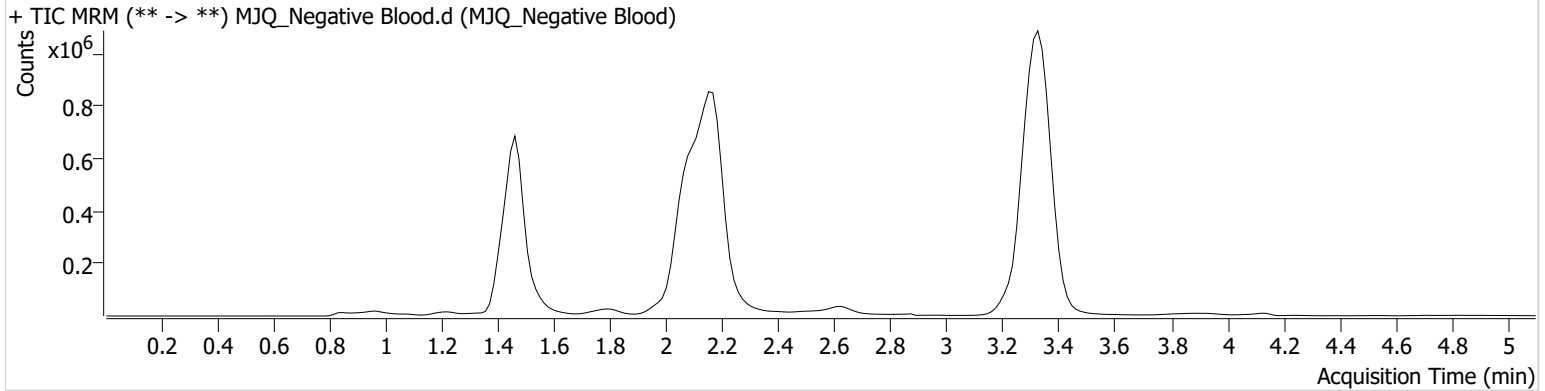


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Negative Blood.d
Type	Sample	Sample	MJQ_Negative Blood
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-A2	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 6:00:28 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.543 High	204259	∞	2.7 Low	∞	2824652	0.3463 ng/ml Low

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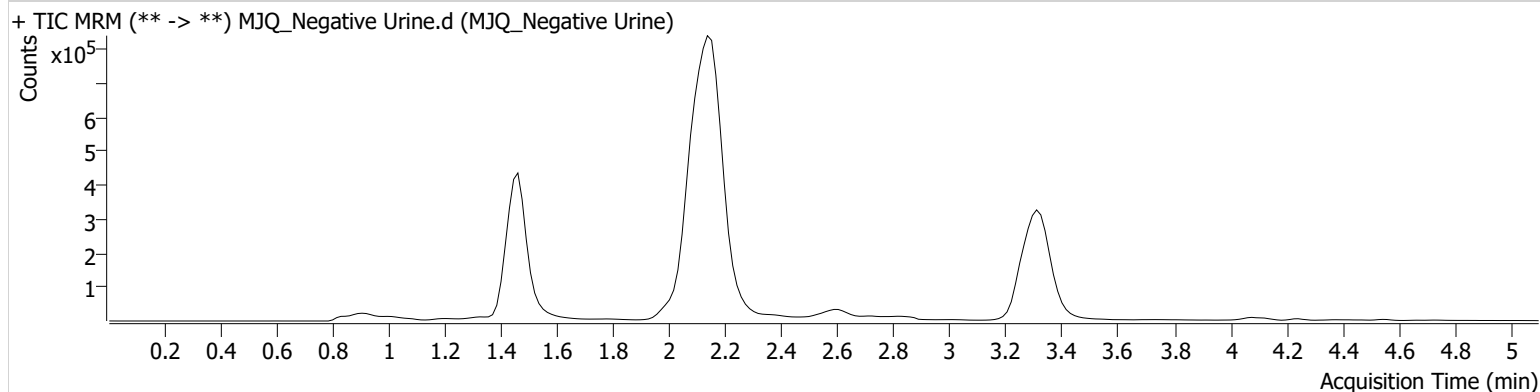


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Negative Urine.d
Type	Sample	Sample	MJQ_Negative Urine
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-B2	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 6:15:40 PM		
Sample Info.			

Sample Chromatogram



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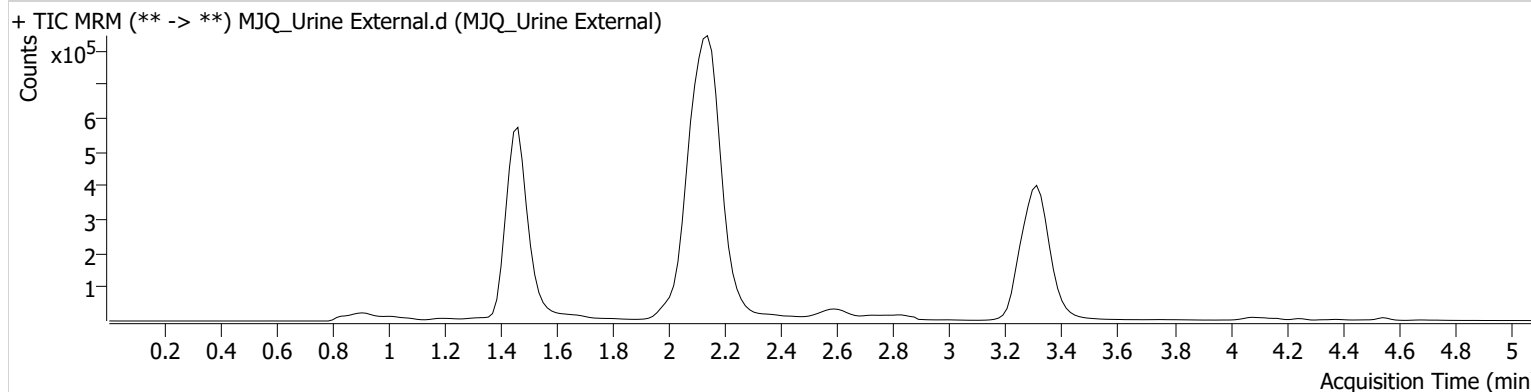


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Urine External.d
Type	Sample	Sample	MJQ_Urine External
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-C2	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 6:30:53 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.453	361512	∞	10.9 High	∞	1819435	9.0878 ng/ml
THC-COOH	1.489	202964	∞	56.0	∞	526036	15.2926 ng/ml
THC	3.330	323183	∞	26.6	∞	2496476	12.6564 ng/ml

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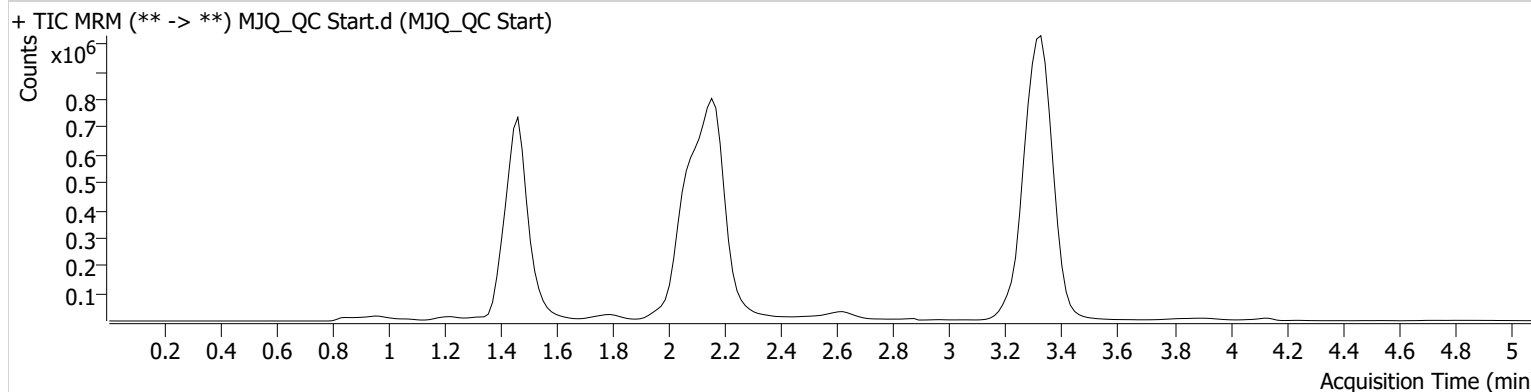


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_QC Start.d
Type	Sample	Sample	MJQ_QC Start
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-H1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 5:45:17 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.468	366078	∞	6.8	153.80	2686529	4.7696 ng/ml
THC-COOH	1.489	244192	∞	53.2	1079.00	631575	15.3236 ng/ml
THC	3.345	310511	∞	28.1	∞	7144267	4.3817 ng/ml

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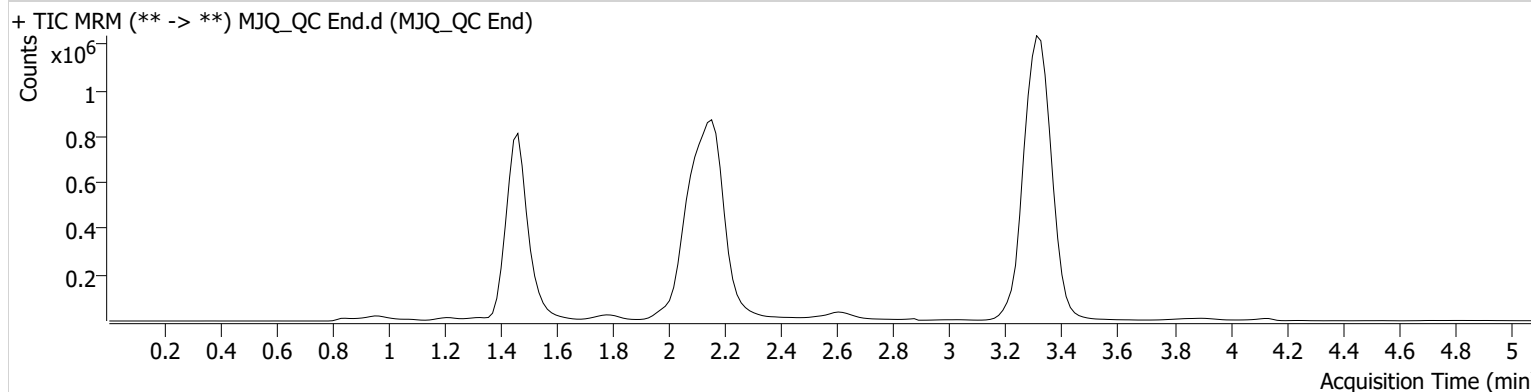


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_QC End.d
Type	Sample	Sample	MJQ_QC End
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-H1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 7:16:31 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.468	378602	∞	6.4 Low	265.91	2815359	4.6460 ng/ml
THC-COOH	1.489	262192	∞	52.5	∞	669973	15.5057 ng/ml
THC	3.330	363823	∞	27.3	∞	8202722	4.4675 ng/ml

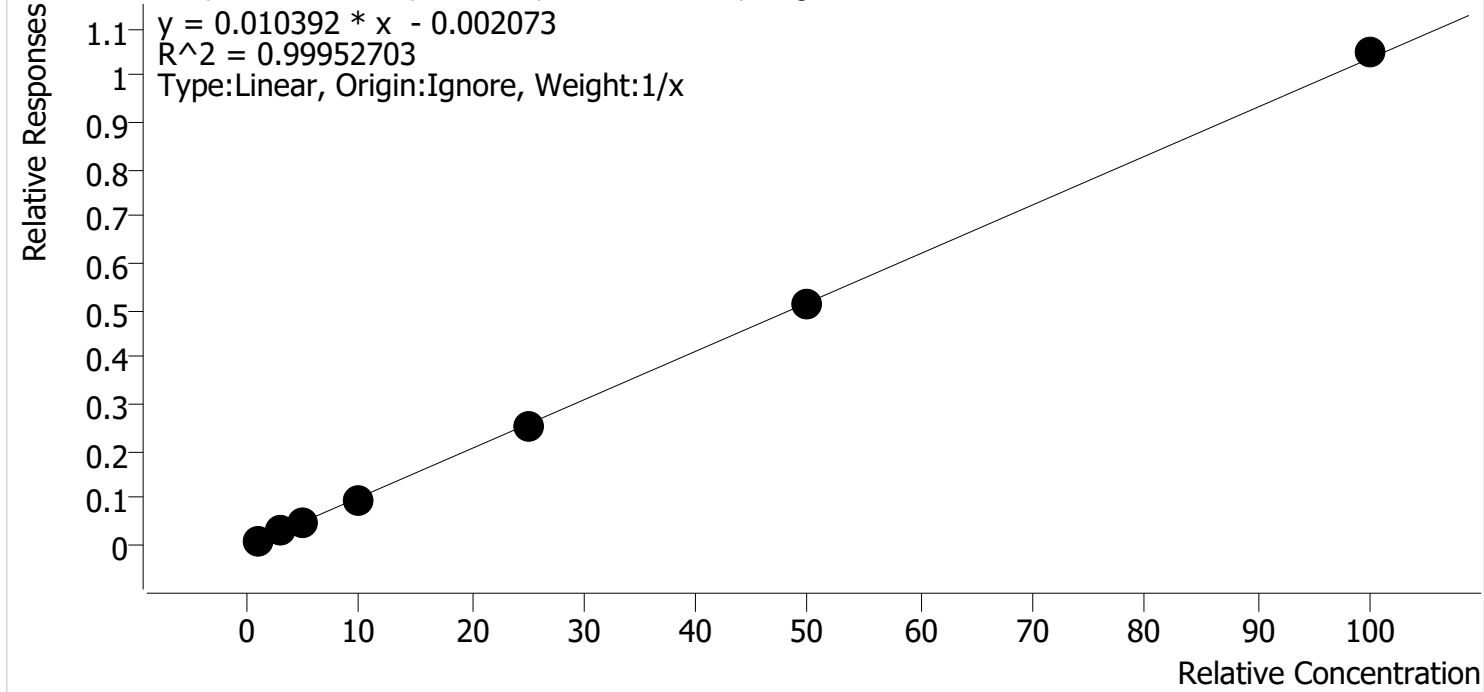
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AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Last Cal. Update 6/22/2021 4:22 PM
Analyst Name ISP\datastor
Analyte THC **Internal Standard** THC-D3

THC - 7 Levels, 7 Levels Used, 7 Points, 7 Points Used, 0 QCs



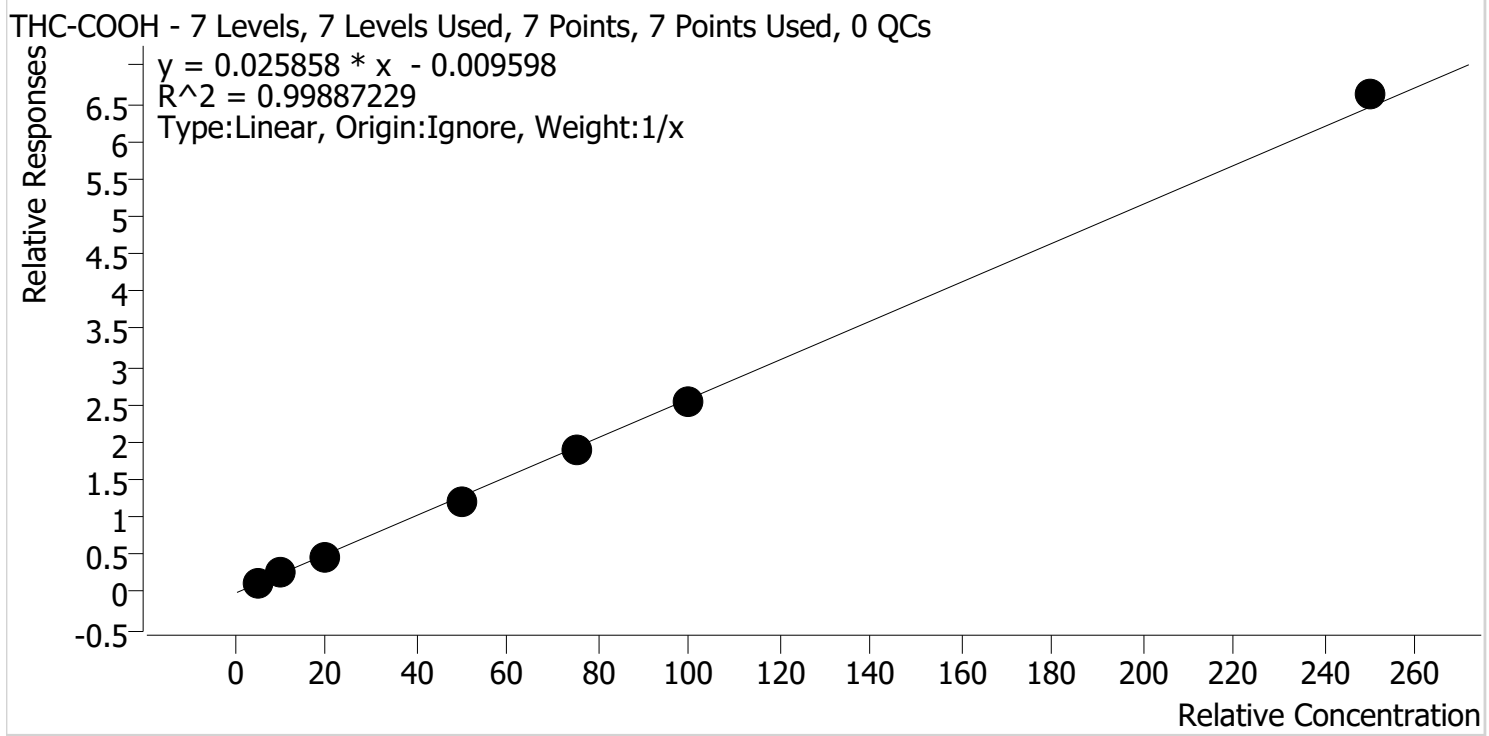
Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJQ_Cal 1	1	✓	1.0	1.1	113.4
MJQ_Cal 2	2	✓	3.0	2.9	97.2
MJQ_Cal 3	3	✓	5.0	4.7	94.8
MJQ_Cal 4	4	✓	10.0	9.5	95.5
MJQ_Cal 5	5	✓	25.0	24.5	98.0
MJQ_Cal 6	6	✓	50.0	50.0	100.0
MJQ_Cal 7	7	✓	100.0	101.2	101.2

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AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Last Cal. Update 6/22/2021 4:22 PM
Analyst Name ISP\datastor
Analyte THC-COOH **Internal Standard** THC-COOH-D9



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJQ_Cal 1	1	✓	5.0	5.4	107.7
MJQ_Cal 2	2	✓	10.0	10.3	102.9
MJQ_Cal 3	3	✓	20.0	19.2	96.2
MJQ_Cal 4	4	✓	50.0	47.6	95.3
MJQ_Cal 5	5	✓	75.0	72.8	97.0
MJQ_Cal 6	6	✓	100.0	98.3	98.3
MJQ_Cal 7	7	✓	250.0	256.4	102.6

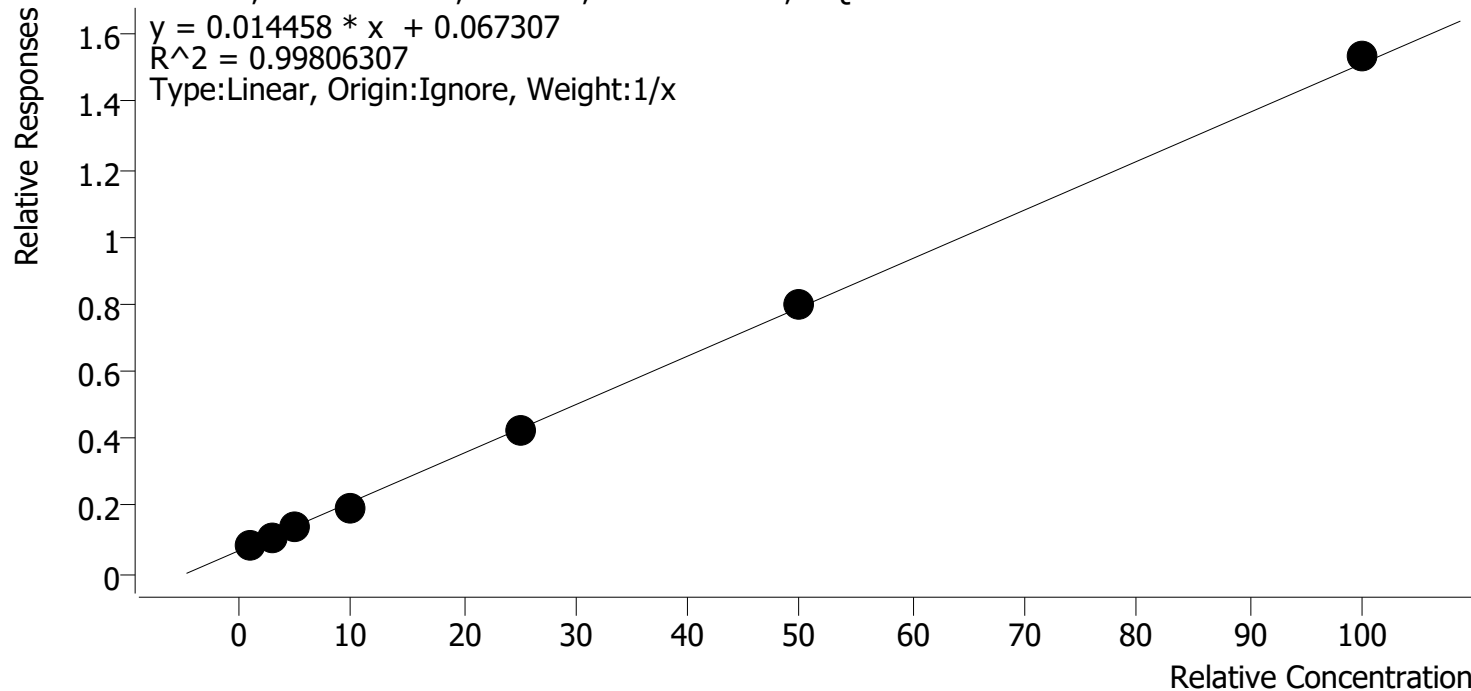
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AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Last Cal. Update 6/22/2021 4:22 PM
Analyst Name ISP\datastor
Analyte THC-OH **Internal Standard** THC-OH-D3

THC-OH - 7 Levels, 7 Levels Used, 7 Points, 7 Points Used, 0 QCs



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJQ_Cal 1	1	✓	1.0	1.2	123.6
MJQ_Cal 2	2	✓	3.0	2.7	91.4
MJQ_Cal 3	3	✓	5.0	4.9	98.2
MJQ_Cal 4	4	✓	10.0	8.5	85.2
MJQ_Cal 5	5	✓	25.0	24.9	99.6
MJQ_Cal 6	6	✓	50.0	50.2	100.5
MJQ_Cal 7	7	✓	100.0	101.4	101.4

Not evaluated due to not meeting ratio requirements.

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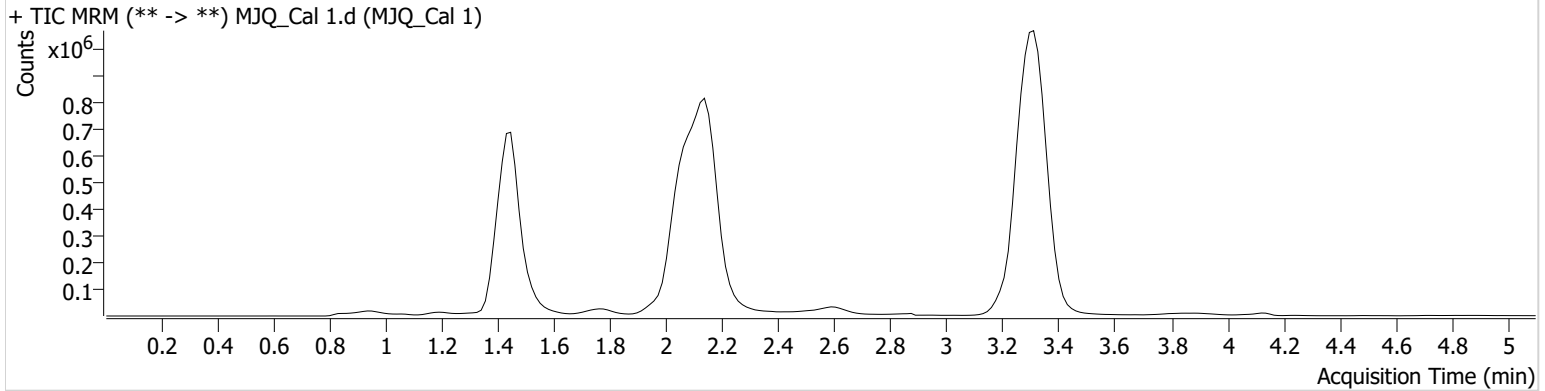


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 1.d
Type	Cal	Sample	MJQ_Cal 1
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-A1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 4:44:23 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.513 High	244128	∞	4.1 Low	∞	2865909	1.2365 ng/ml Low
THC-COOH	1.474	90976	∞	50.2	161.96	701420	5.3871 ng/ml
THC	3.330	78107	∞	26.9	∞	8042926	1.1340 ng/ml

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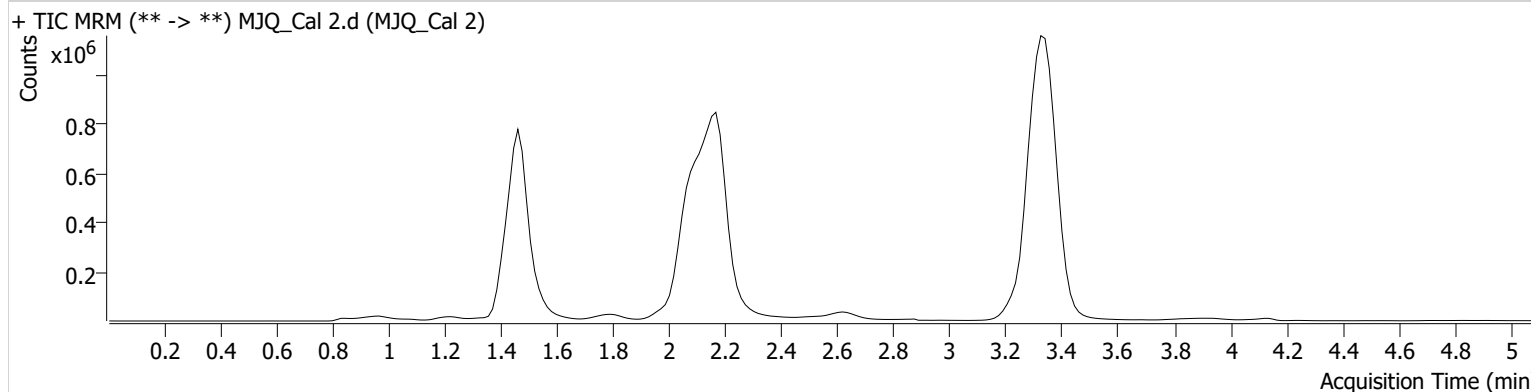


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 2.d
Type	Cal	Sample	MJQ_Cal 2
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-B1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 4:52:08 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.528 High	311954	∞	5.8 Low	∞	2916337	2.7432 ng/ml Low
THC-COOH	1.504	178499	∞	52.3	1319.93	696008	10.2893 ng/ml
THC	3.345	229269	∞	29.5	∞	8120266	2.9163 ng/ml

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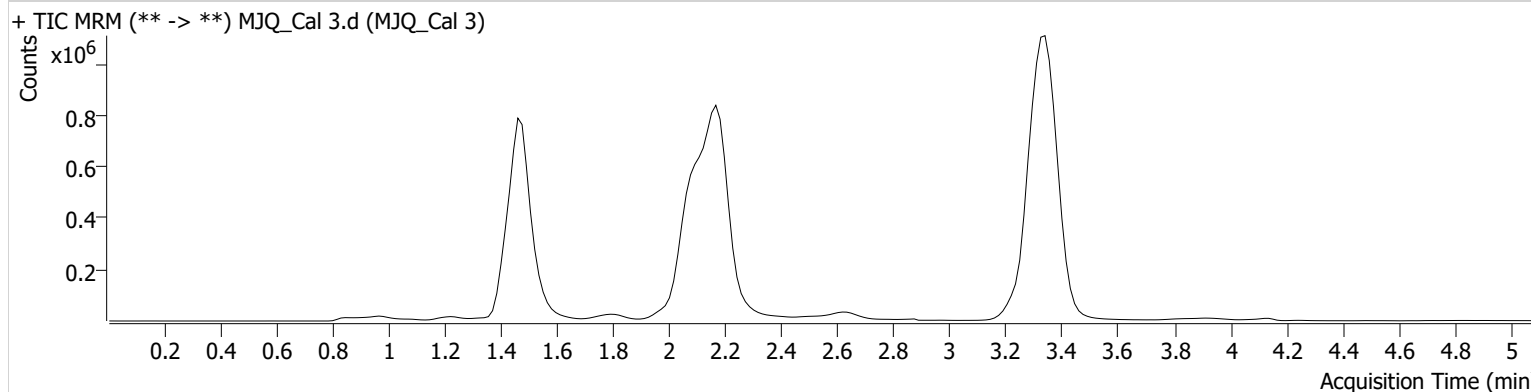


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 3.d
Type	Cal	Sample	MJQ_Cal 3
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-C1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 4:59:44 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.483	391773	∞	6.6	275.78	2833400	4.9083 ng/ml
THC-COOH	1.504	335881	∞	55.4	∞	688346	19.2417 ng/ml
THC	3.360	364359	3072.25	26.6	∞	7725452	4.7378 ng/ml

AG

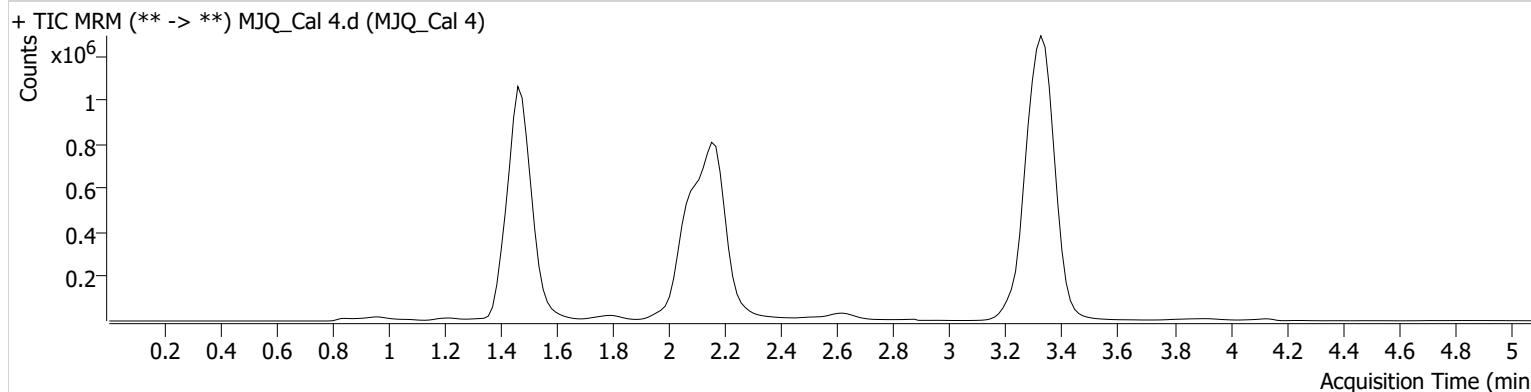


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 4.d
Type	Cal	Sample	MJQ_Cal 4
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-D1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 5:07:19 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.468	602041	∞	8.8	160.46	3160101	8.5219 ng/ml
THC-COOH	1.504	956542	∞	55.7	3274.16	782482	47.6466 ng/ml
THC	3.345	818312	∞	25.4	1421.26	8423449	9.5475 ng/ml

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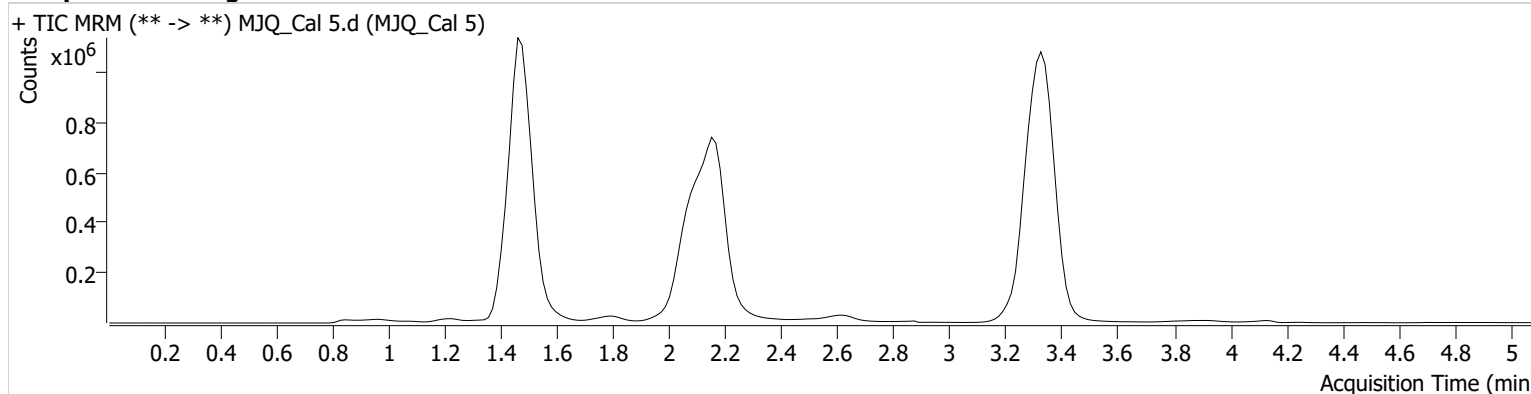


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 5.d
Type	Cal	Sample	MJQ_Cal 5
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-E1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 5:14:54 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.468	1124972	∞	10.0 High	413.66	2633064	24.8963 ng/ml
THC-COOH	1.504	1210542	∞	56.9	∞	646621	72.7707 ng/ml
THC	3.345	1532478	∞	25.5	∞	6066985	24.5054 ng/ml

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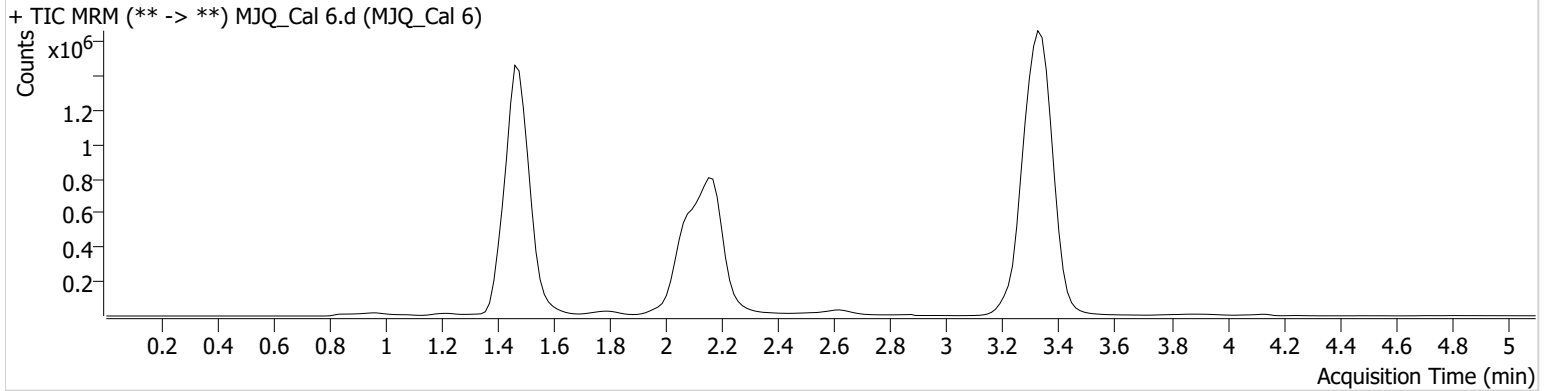


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 6.d
Type	Cal	Sample	MJQ_Cal 6
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-F1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 5:22:29 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.468	2204936	∞	11.0 High	∞	2777884	50.2460 ng/ml
THC-COOH	1.504	1640861	∞	56.4	∞	648103	98.2825 ng/ml
THC	3.345	3937561	∞	25.3	∞	7611238	49.9803 ng/ml

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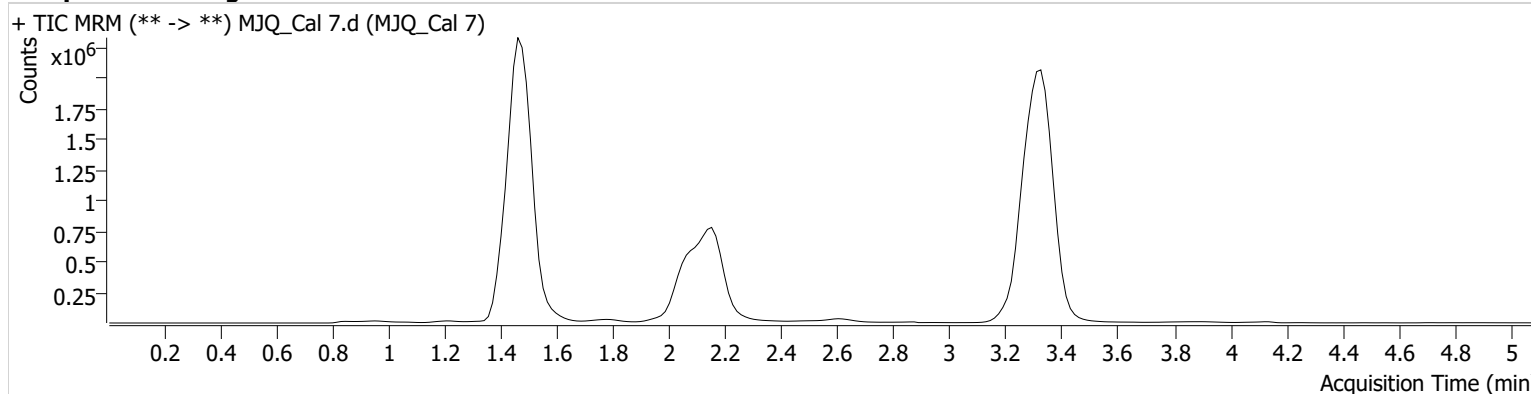


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\061621 AM 27 28 P1 P2 AG\QuantResults\AM 27.batch.bin
Calibration Last Update 6/22/2021 4:22:09 PM

Instrument	Falco (069901)	Data File	MJQ_Cal 7.d
Type	Cal	Sample	MJQ_Cal 7
Acq. Method	AM 27 THCQ.m	Operator	Amber Gerheart
Sample Position	P1-G1	Comment	
Injection Volume	10		
Acq. Date-Time	6/16/2021 5:30:05 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-OH	1.453	3977977	∞	11.3 High	∞	2593196	101.4478 ng/ml
THC-COOH	1.489	3724567	∞	57.1	13322.8 6	562630	256.3821 ng/ml
THC	3.330	7207333	∞	25.4	∞	6868045	101.1786 ng/ml