








REVIEWED
By Tamara Salazar at 2:17 pm, Dec 28, 2021

SC

12/16/2021

Worklist: 5462

Central file updated 3/3/22 to include memo SC

<u>LAB_CASE</u>	<u>ITEM</u>	<u>ITEM_TYPE</u>	<u>DESCRIPTION</u>	
M2021-5169	3	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
* M2021-5294	6	BCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2021-3838	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2021-4010	1	BCK	AM 27 Blood THC Quant by LC-QQQ	
P2021-4016	1	BCK	AM 27 Blood THC Quant by LC-QQQ	
P2021-4027	1	BCK	AM 27 Blood THC Quant by LC-QQQ	
P2021-4060	1	BCK	AM 27 Blood THC Quant by LC-QQQ	

*See worklist 5478. Incorrect task was originally assigned to item.

SC

12/28/2021

Worklist: 5478

<u>LAB_CASE</u>	<u>ITEM</u>	<u>ITEM_TYPE</u>	<u>DESCRIPTION</u>
M2021-5291	6	BCK	AM 27 Blood THC Quant by LC-QQQ



SC

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

Extraction Date: 12/16/21
Plate lot#: IDP-108-3-211018
Mobile phase A: 0.1% Formic Acid in LCMS Water
Blank Blood Lot: Lampire 20L20725
Column: UCT Selectra DA 100 x 2.1mm 3um
LCMS-QQQ ID: 069901

Analyst: Sarah Collins
Retest Date: 04/18/2022
Mobile phase B: 0.1% Formic acid in Acetonitrile
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:** 3382167
- 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 uL
- 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: Did not evaluate THC-OH due to interfering peak.

SC

	1	2	3	4	5	6
A	IS + Cal. 1	IS + QC_1			p2021-4016-1*	IS + QC_1 blood
B	IS + Cal. 2				p2021-4010-1	IS + Cal. 7
C	IS + Cal. 3				m2021-5291-6*	IS + Cal. 6
D	IS + Cal. 4				p2021-3838-1	IS + Cal. 5
E	IS + Cal. 5			p2021-4016-1	m2021-5169-3	IS + Cal. 4
F	IS + Cal. 6			m2021-5291-6	negative urine	IS + Cal. 3
G	IS + Cal. 7			p2021-4060-1	negative blood	IS + Cal. 2
H	IS + QC_1			p2021-4027-1	IS + QC_1 urine	IS + Cal. 1

All wells to contain 100 µl of residual DMSO

*Samples moved during analytical step 6 due to blood clot.



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.

SC

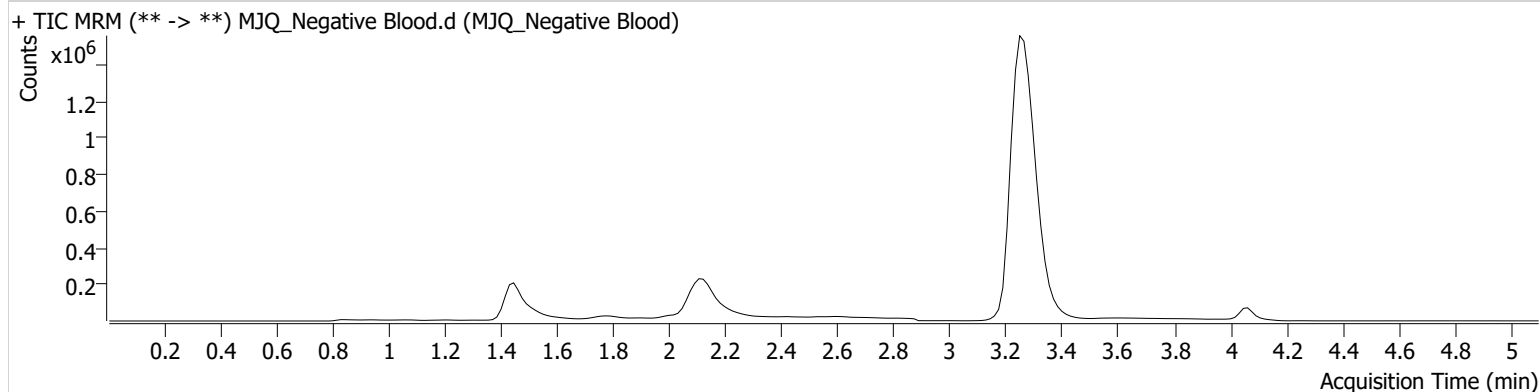


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Negative Blood.d
Type	Sample	Sample	MJQ_Negative Blood
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-G5	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 5:58:13 PM		
Sample Info.			

Sample Chromatogram



SC

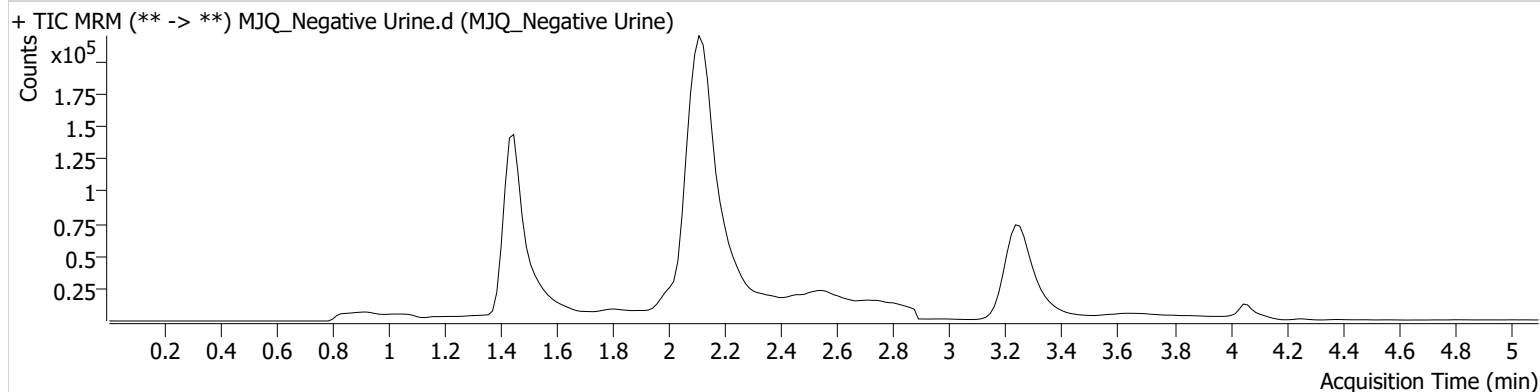


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Negative Urine.d
Type	Sample	Sample	MJQ_Negative Urine
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-F5	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 6:13:28 PM		
Sample Info.			

Sample Chromatogram



SC

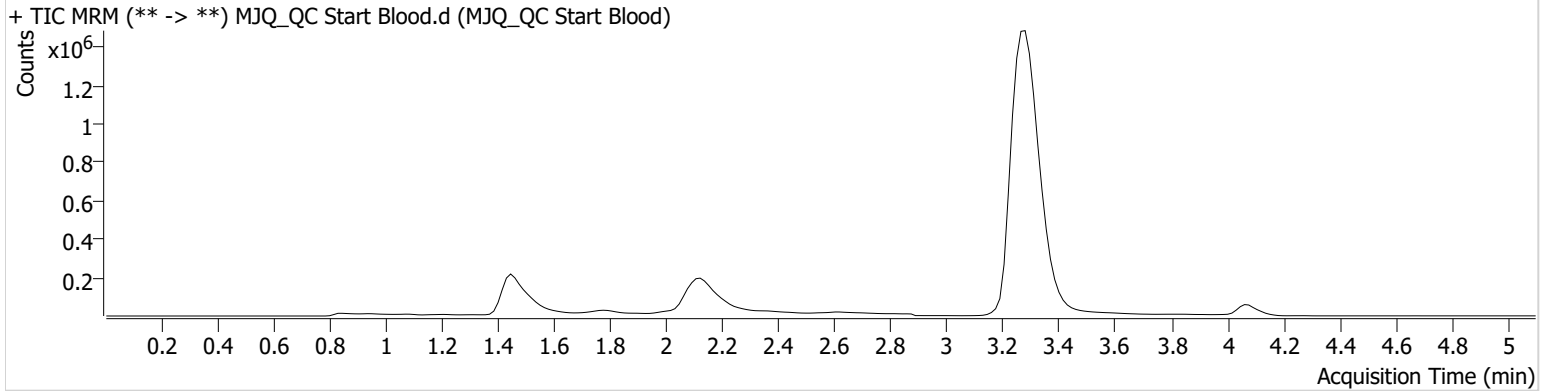


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_QC Start Blood.d
Type	Sample	Sample	MJQ_QC Start Blood
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-A6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 5:27:45 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	70204	117.07	68.0	∞	201310	13.8995 ng/ml
THC-OH	1.513	201780	∞	6.0 Low	∞	716032	6.9667 ng/ml
THC	3.285	415223	3796.66	26.7	∞	10039120	4.8695 ng/ml

SC

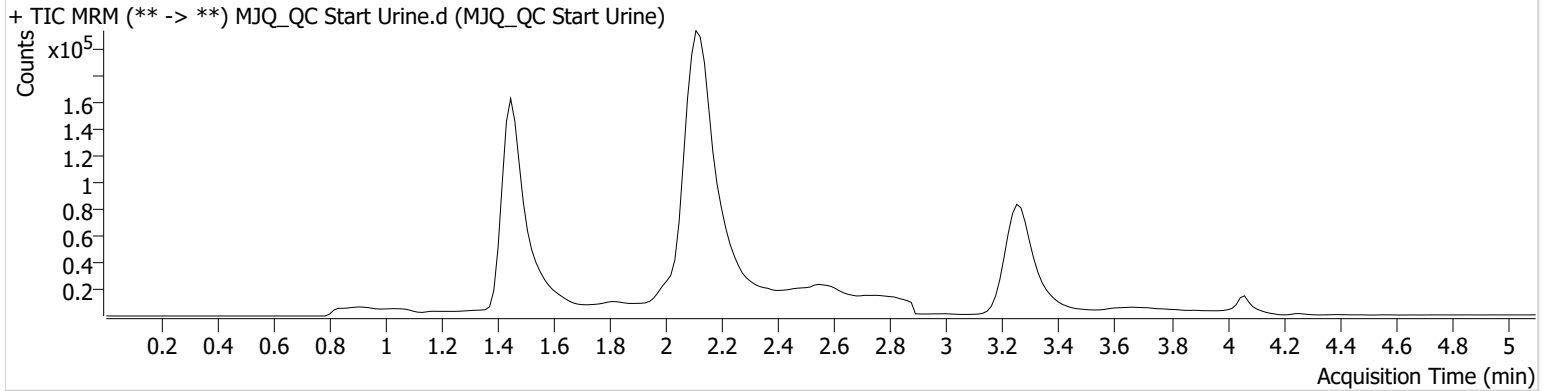


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_QC Start Urine.d
Type	Sample	Sample	MJQ_QC Start Urine
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-H5	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 5:42:59 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	56746	156.15	67.7	∞	143455	15.6946 ng/ml
THC	3.270	25326	∞	30.2	27.52	588155	5.0705 ng/ml

SC



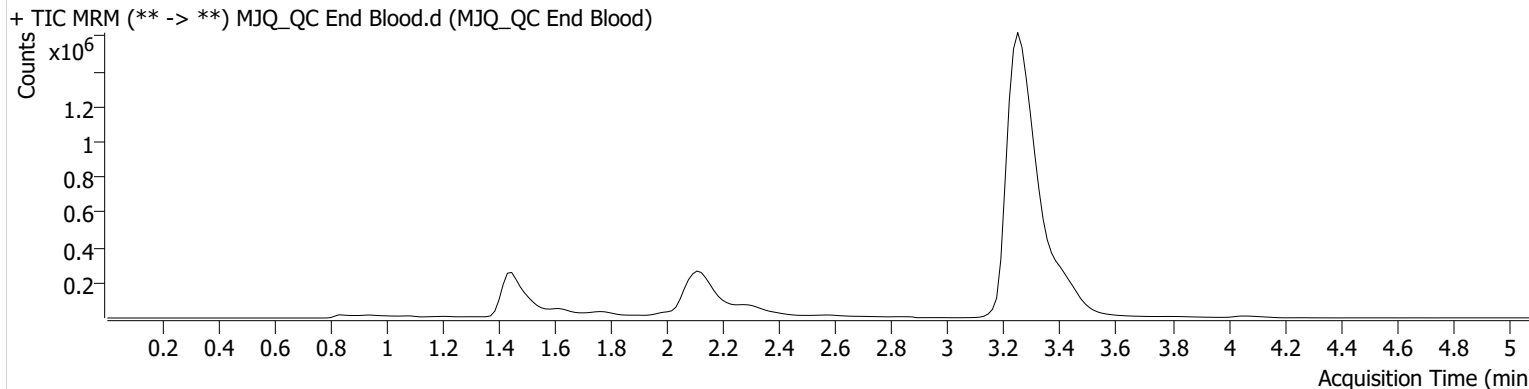
AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_QC End Blood.d
Type	Sample	Sample	MJQ_QC End Blood
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-A6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 8:15:13 PM		

Sample Info.

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	74561	∞	70.7	687.72	214172	13.8765 ng/ml
THC-OH	1.513	231282	∞	6.4	∞	928073	4.4780 ng/ml
THC	3.270	484475	2114.27	28.2	∞	12094264	4.7156 ng/ml

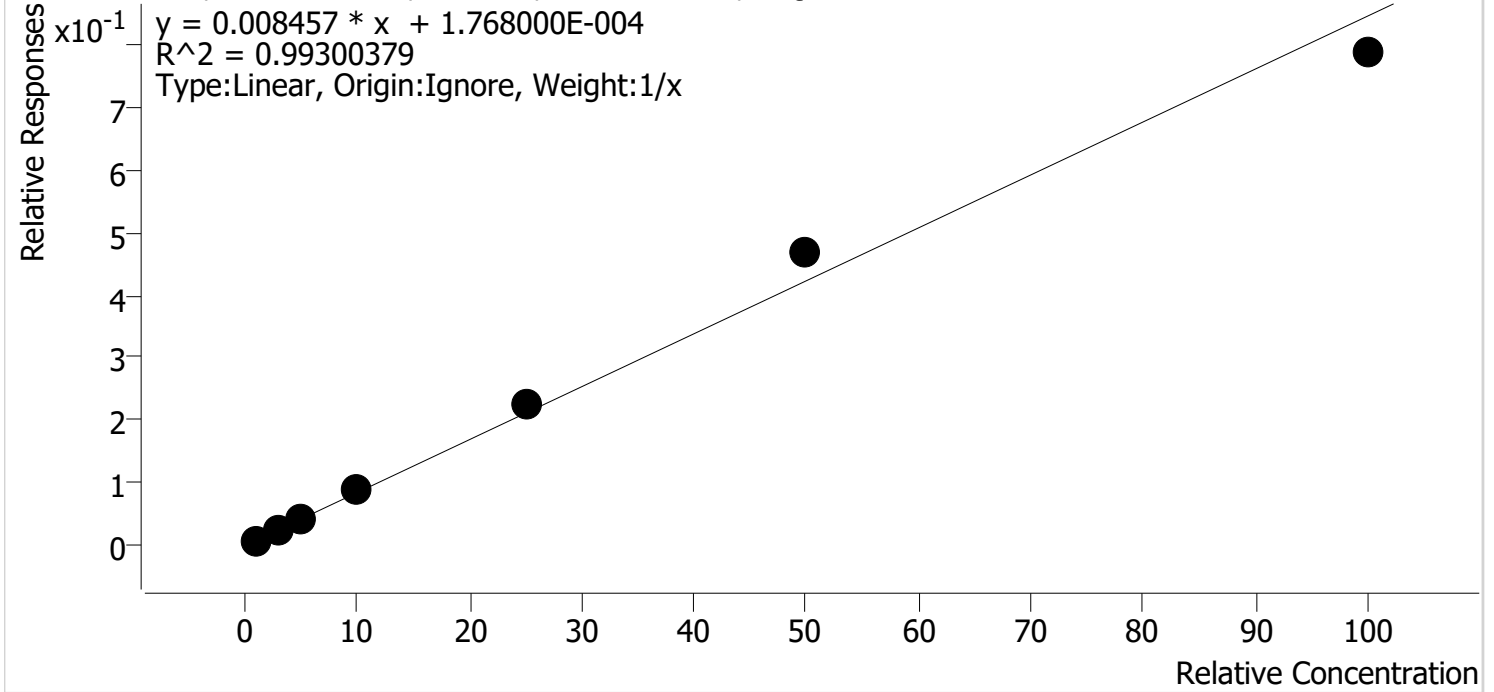
SC



AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Last Cal. Update 12/22/2021 6:51 AM
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	0.9	92.1
MJQ_Cal 2	2	✓	3.0	2.9	97.5
MJQ_Cal 3	3	✓	5.0	4.8	95.6
MJQ_Cal 4	4	✓	10.0	10.4	104.5
MJQ_Cal 5	5	✓	25.0	26.8	107.1
MJQ_Cal 6	6	✓	50.0	55.1	110.2
MJQ_Cal 7	7	✓	100.0	93.1	93.1

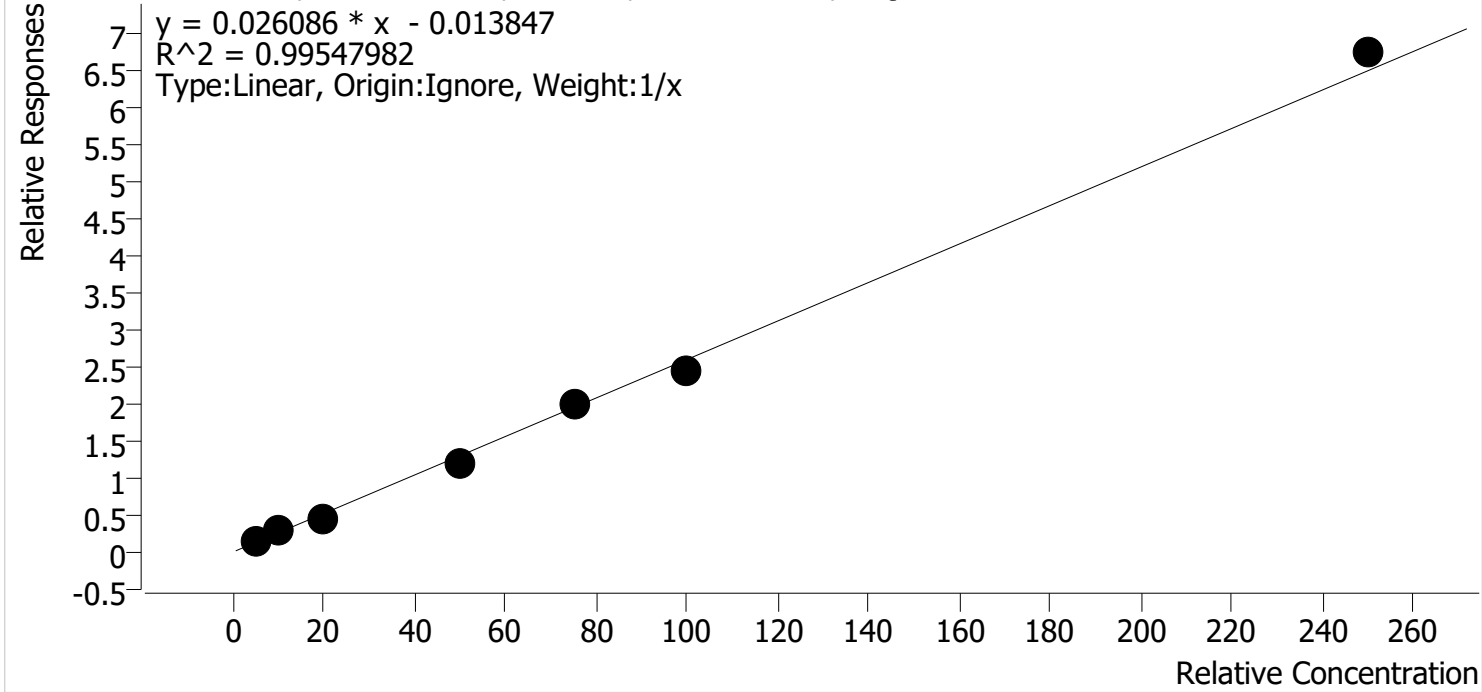
SC



AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Last Cal. Update 12/22/2021 6:51 AM
Analyst Name ISP\Datastor
Analyte THC-COOH **Internal Standard** THC-COOH-D9

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



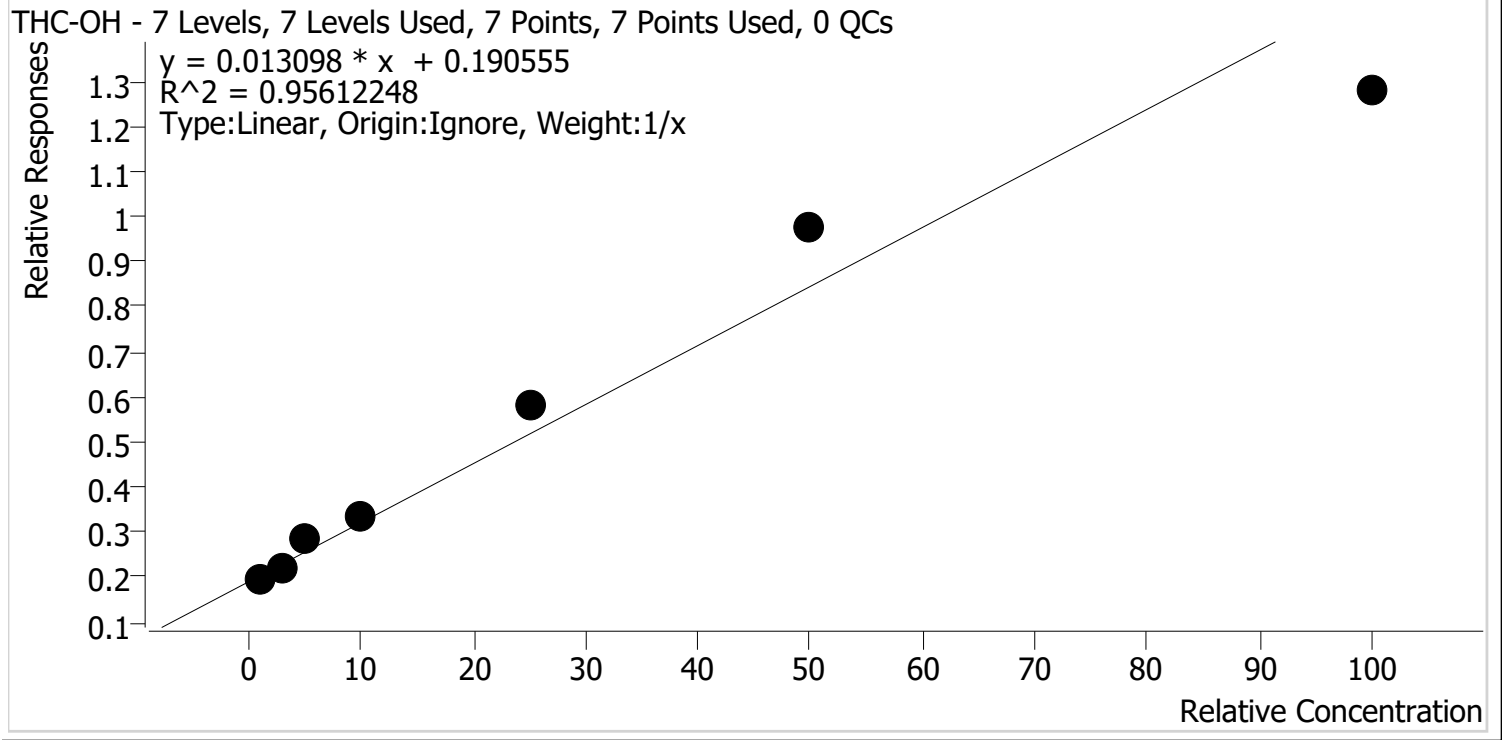
Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJQ_Cal 1	1	✓	5.0	5.8	115.9
MJQ_Cal 2	2	✓	10.0	10.6	105.6
MJQ_Cal 3	3	✓	20.0	17.3	86.6
MJQ_Cal 4	4	✓	50.0	45.4	90.7
MJQ_Cal 5	5	✓	75.0	77.7	103.5
MJQ_Cal 6	6	✓	100.0	93.9	93.9
MJQ_Cal 7	7	✓	250.0	259.4	103.7

SC



AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Last Cal. Update 12/22/2021 6:51 AM
Analyst Name ISP\Datastor
Analyte THC-OH **Internal Standard** THC-OH-D3



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJQ_Cal 1	1	✓	1.0	0.5	50.5
MJQ_Cal 2	2	✓	3.0	2.1	70.8
MJQ_Cal 3	3	✓	5.0	7.4	148.0
MJQ_Cal 4	4	✓	10.0	10.8	107.8
MJQ_Cal 5	5	✓	25.0	29.8	119.1
MJQ_Cal 6	6	✓	50.0	60.3	120.6
MJQ_Cal 7	7	✓	100.0	83.1	83.1

Did not evaluate.

SC

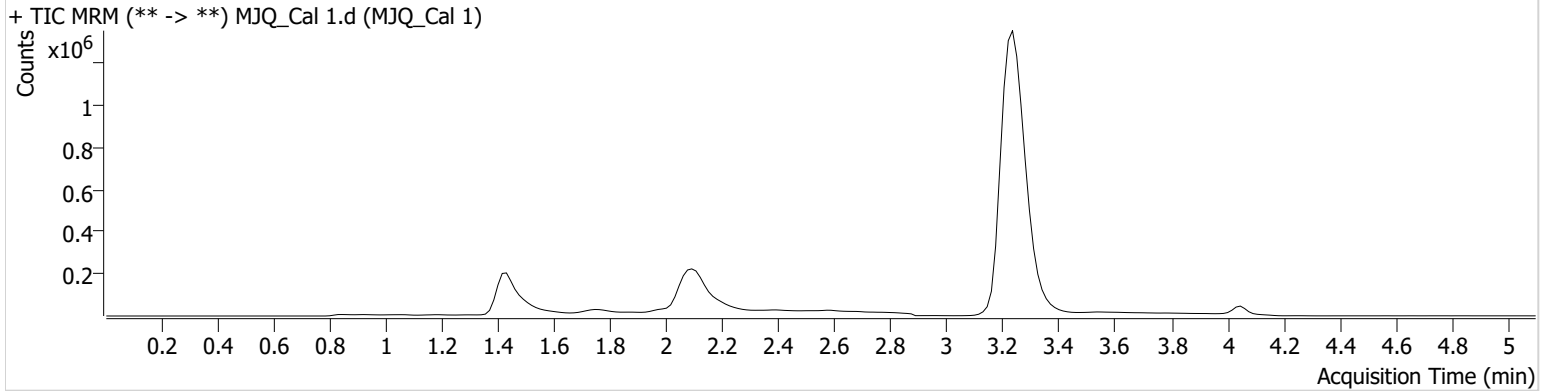


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 1.d
Type	Cal	Sample	MJQ_Cal 1
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-H6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 3:57:59 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.459	26732	61.87	52.7	104.60	194732	5.7932 ng/ml
THC-OH	1.498	141128	∞	2.8 Low	12.11	715758	0.5053 ng/ml Low
THC	3.239	66240	387.96	27.4	462.08	8313927	0.9212 ng/ml Low

SC

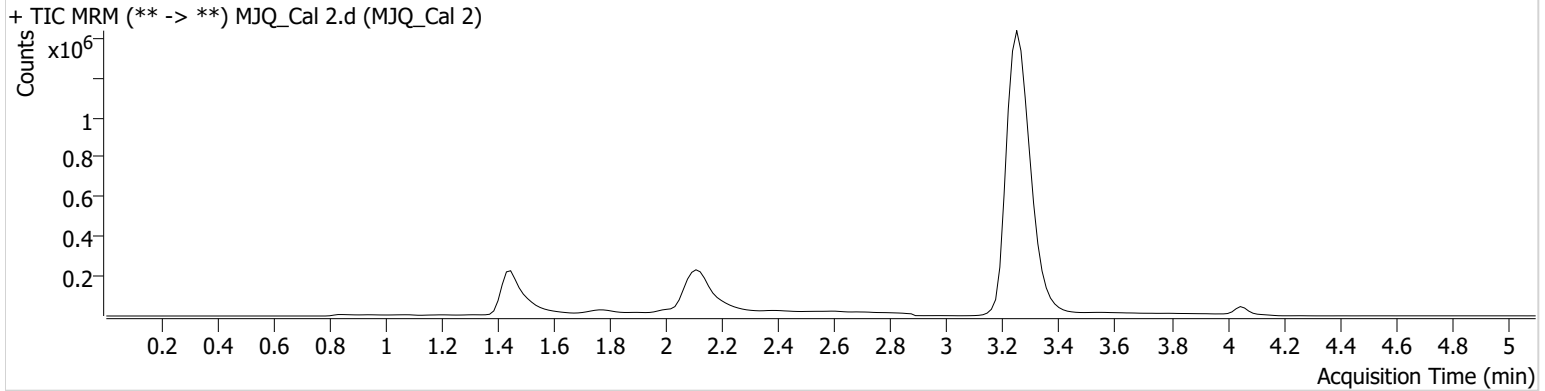


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 2.d
Type	Cal	Sample	MJQ_Cal 2
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-G6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 4:05:46 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	51752	∞	56.0	384.03	197854	10.5579 ng/ml
THC-OH	1.513	158630	∞	4.4 Low	36.39	726357	2.1253 ng/ml Low
THC	3.270	209202	1526.58	25.8	396.22	8399601	2.9240 ng/ml

SC

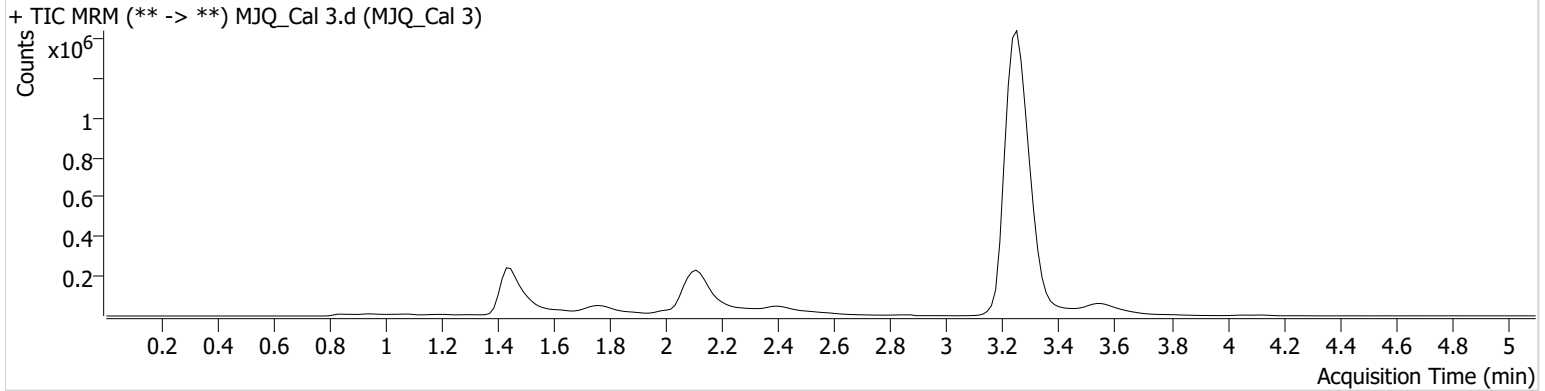


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 3.d
Type	Cal	Sample	MJQ_Cal 3
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-F6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 4:13:23 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	91116	60.97	59.1	282.70	208094	17.3161 ng/ml
THC-OH	1.513	195384	∞	5.9 Low	∞	679634	7.4004 ng/ml
THC	3.254	344563	∞	26.1	227.14	8487702	4.7791 ng/ml

SC



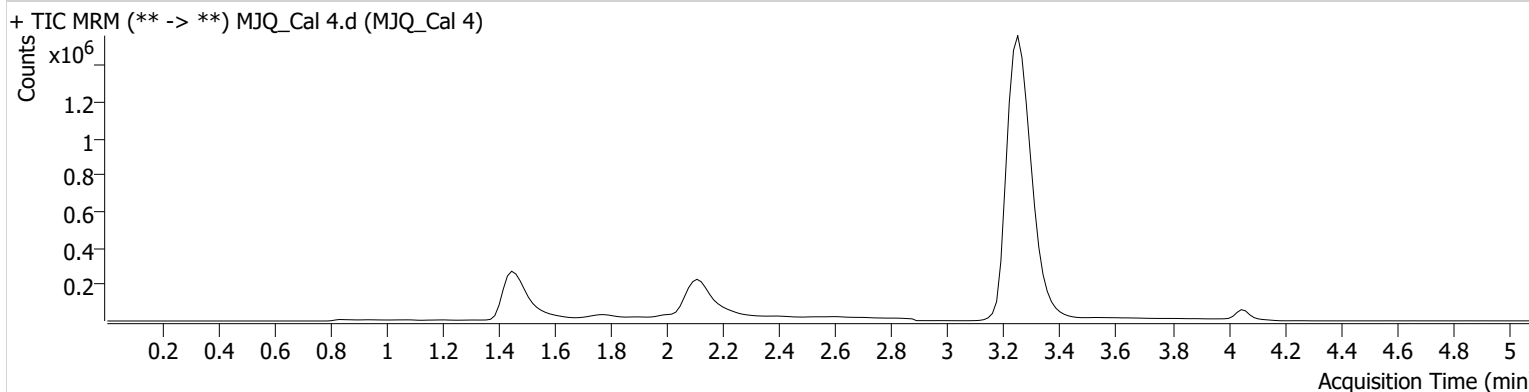
AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 4.d
Type	Cal	Sample	MJQ_Cal 4
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-E6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 4:21:01 PM		

Sample Info.

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	226294	1836.57	65.8	343.25	193452	45.3736 ng/ml
THC-OH	1.513	233837	∞	6.5	53.17	704774	10.7832 ng/ml
THC	3.270	775611	8175.41	25.0	1047.03	8758518	10.4498 ng/ml

SC



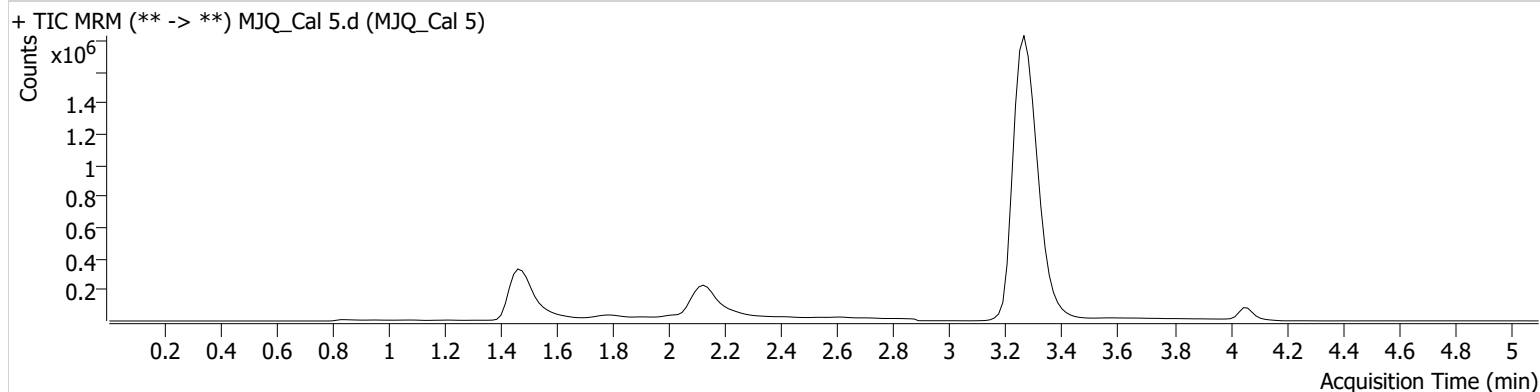
AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 5.d
Type	Cal	Sample	MJQ_Cal 5
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-D6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 4:28:37 PM		

Sample Info.

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.489	378823	560.55	65.8	∞	188294	77.6551 ng/ml
THC-OH	1.453 Low	395163	∞	9.0	∞	680663	29.7762 ng/ml
THC	3.285	1990898	12626.75	25.9	∞	8785347	26.7739 ng/ml

SC

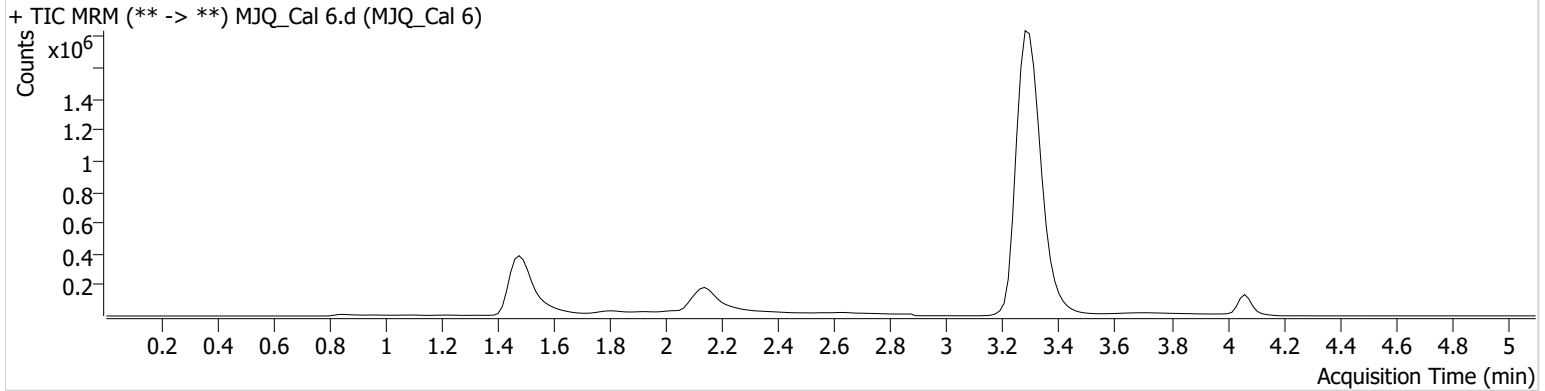


AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 6.d
Type	Cal	Sample	MJQ_Cal 6
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-C6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 4:36:12 PM		

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.489	411840	∞	71.4	3500.81	169004	93.9471 ng/ml
THC-OH	1.468 Low	614699	∞	10.8 High	487.32	627222	60.2760 ng/ml
THC	3.300	3356108	22488.59	25.3	3000.90	7200205	55.0919 ng/ml

SC



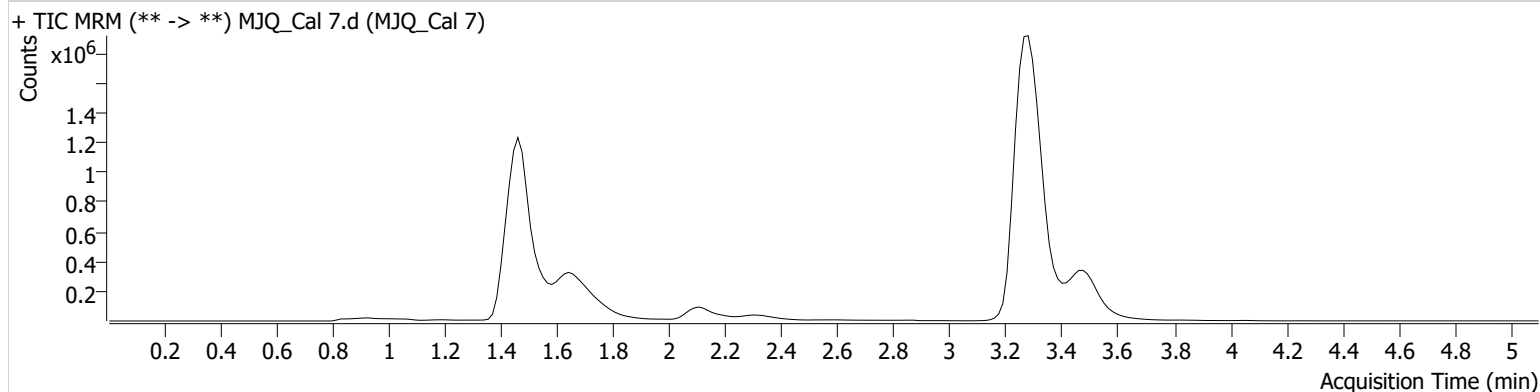
AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2021\AM 27-28\121621 AM 27 28 SC\QuantResults\AM 27.batch.bin
Calibration Last Update 12/22/2021 6:51:05 AM

Instrument	Falco (069901)	Data File	MJQ_Cal 7.d
Type	Cal	Sample	MJQ_Cal 7
Acq. Method	AM 27 THCQ.m	Operator	Sarah Collins
Sample Position	P1-B6	Comment	
Injection Volume	10		
Acq. Date-Time	12/16/2021 5:12:22 PM		

Sample Info.

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC-COOH	1.474	2198285	∞	57.5	∞	325587	259.3571 ng/ml
THC-OH	1.438 Low	1512079	821.51	13.8 High	2450.48	1181851	83.1336 ng/ml
THC	3.285	4854884	70901.75	28.3	∞	6167061	93.0602 ng/ml