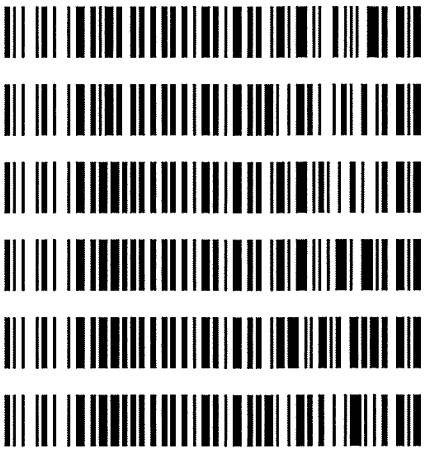
REVIEWED
By Sarah Pickle at 8:36 am, Nov 19, 2019

11/13/2019

Worklist: 3818

LAB_CASE	ITEM	ITEM_TYPE	DESCRIPTION
M2019-4750	3	BCK	AM 27 Blood THC Quant by LC-QQQ
M2019-4870	2	BCK	AM 27 Blood THC Quant by LC-QQQ
P2019-3261	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2019-3277	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2019-3290	1	BCK	AM 27 Blood THC Quant by LC-QQQ
P2019-3325	1	BCK	AM 27 Blood THC Quant by LC-QQQ



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CS

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

Extraction Date: 11/08/19
Plate lot#: IDP-108-190716

Analyst: Tamara Salazar
Plate Expiration: 01/16/2020

Mobile phase A: 0.1% Formic Acid in LCMS Water
MTBE LCMS Methanol
Blank Blood Lot: Hemostat 445283-3
LCMS-QQQ ID: 069901

Mobile phase B: 0.1% Formic acid in Acetonitrile
Hexane
Column: UCT Selectra DA 100 x 2.1mm 3um

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.
☒ 3. Create worklist:

Analytic:

☒ 1. Remove standards, plate, controls, and samples from cold storage. Allow to reach room temperature.
☒ 2. Pipette **1000µL blood/urine (calibrated pipette) Pipette ID: 3** in wells of analytical (standards) plate.
☒ 3. Place on shaking incubator at ambient temp., 900rpm for 15 minutes. *Shaker ID: 067105*
☒ 4. Pipette **500µL 0.1% formic acid in water for blood samples**, **500µl saturated phosphate buffer for urine samples** in wells of analytical plate.
☒ 5. Place on shaking incubator at ambient temp., 900rpm for 15 minutes.
☒ 6. Transfer **800µL of blood+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)*** Manifold ID: 067104
☒ 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. *SPE Dry ID: 067103*
☒ 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.
Worklist path: *D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP*
Batch Name: *THCQ TS wklst 3818*
☒ 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 and OH-THC 3ng/mL (quantitative), Carboxy-THC: 10ng/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? Y / N
☒ 6 Enter QCs into control charting.
☒ 7 Central File Packet to include: LIMS Worklist, Method Checklist, Calibration and Control Reports

COMMENTS: *Curves limited: THC-OH 3-100* THC-OH was not evaluated for the urine cases due to the external control concentration being lower than anticipated. CS
Urine controls were included for the re-extraction of urine samples from another worklist.

Case samples m2019-4402-4 and m4632-3 from worklist 3819 were run with this worklist with Tamara Salazar acting as the primary analyst, performing steps 3-16. CS
I, Celena Shrum approved of all steps used in this method.

TS

Idaho State Police Forensic Services

AM #27 Quantitative Analysis of THC and Metabolites in Blood and Urine by LCMS-QQQ

Methanol External Control Solution (Lot: WS041619)

10 ul of 1mg/mL THC, 100 ul of 100 ug/mL THC-OH, C-THC in 9790 ul MeOH
Approximate concentration 1ug/mL.

Component	*Source*	*Source Lot Number*	*Expiration Date*
Methanol (LCMS)	Fisher	184782	
THC	Cerilliant	FE09101501	11/30/2020
C-THC	Cerilliant	FE07171501	09/30/2020
THC-OH	Cerilliant	FE01121503	01/31/2020
Prepared:	04/16/2019		
Prepared By:	Tamara Salazar		
Expires:	01/31/2020		

Urine External Control Solution (Lot: 100719)

100 ul of methanol external control solution was added to 9900 ul of urine.
Approximately 10ng/mL of each compound.

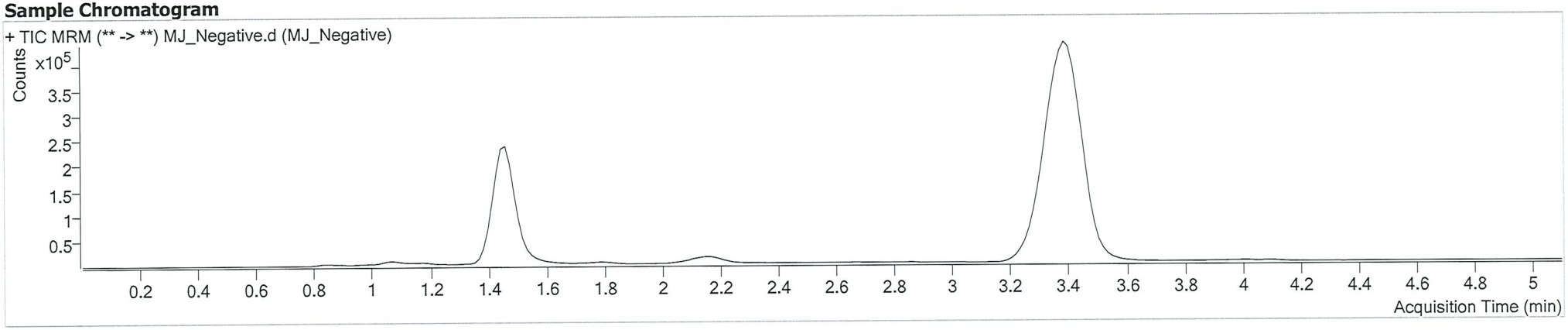
Component	*Source*	*Source Lot Number*
Negative Urine	Pocatello Lab	POC031319
Methanol External Control Solution	-	WS041619
Prepared:	10/07/19	
Prepared by:	Celena Shrum	
Expires:	01/31/2020	

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Negative.d
Type	Sample	**Sample**	MJ_Negative
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-H5	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 9:00:05 PM		
Sample Info.			

Sample Chromatogram



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AM #27 Cannabinoids Quant. Results

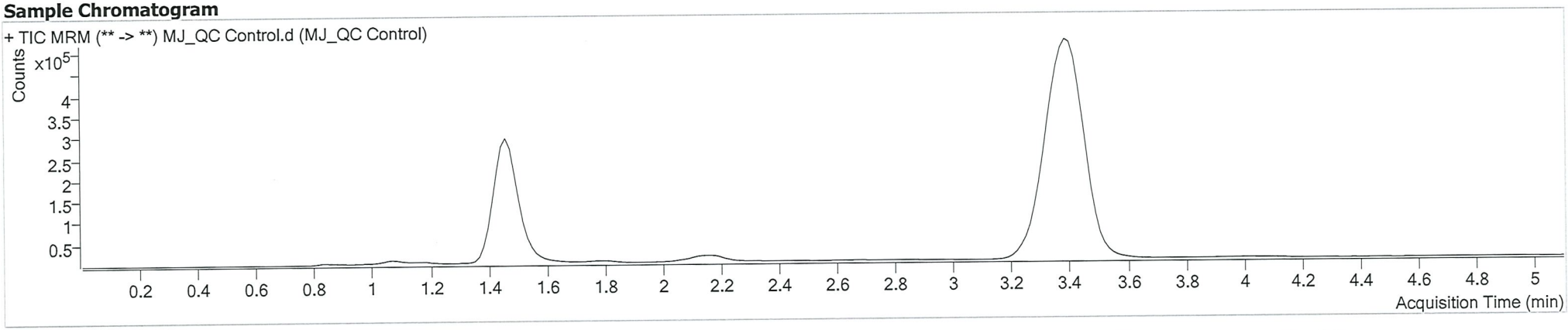
Batch results D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update 11/18/2019 8:13:38 AM

Instrument Falco
Type Sample
Acq. Method AM 27 THC quant.m
Sample Position P3-A6
Injection Volume 10
Acq. Date-Time 11/8/2019 8:44:54 PM
Sample Info.

Data File MJ_QC Control.d
Sample MJ_QC Control

Comment

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.405	158546	498.64	26.4	191.69	4650249	4.3496 ng/ml
THC-COOH	1.504	100174	1225.57	57.5	406.41	297027	14.1836 ng/ml
THC-OH	1.468	90765	∞	10.3	89.84	1184715	4.2538 ng/ml

AM #27 Cannabinoids Quant. Results

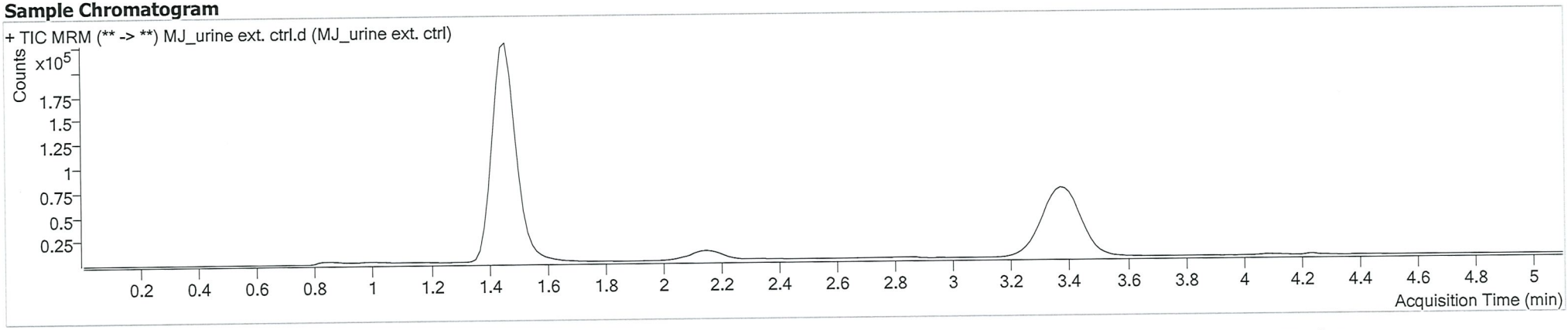
Batch results D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update 11/18/2019 8:13:38 AM

Instrument Falco
Type Sample
Acq. Method AM 27 THC quant.m
Sample Position P3-H4
Injection Volume 10
Acq. Date-Time 11/8/2019 11:01:40 PM
Sample Info.

Data File MJ_urine ext. ctrl.d
Sample MJ_urine ext. ctrl

Comment

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.405	20836	92.14	26.0	25.36	658257	4.0458 ng/ml
THC-COOH	1.504	27995	186.54	61.3	159.75	211927	5.0908 ng/ml
THC-OH	1.468	55272	263.19	14.2	315.03	974283	2.5839 ng/ml

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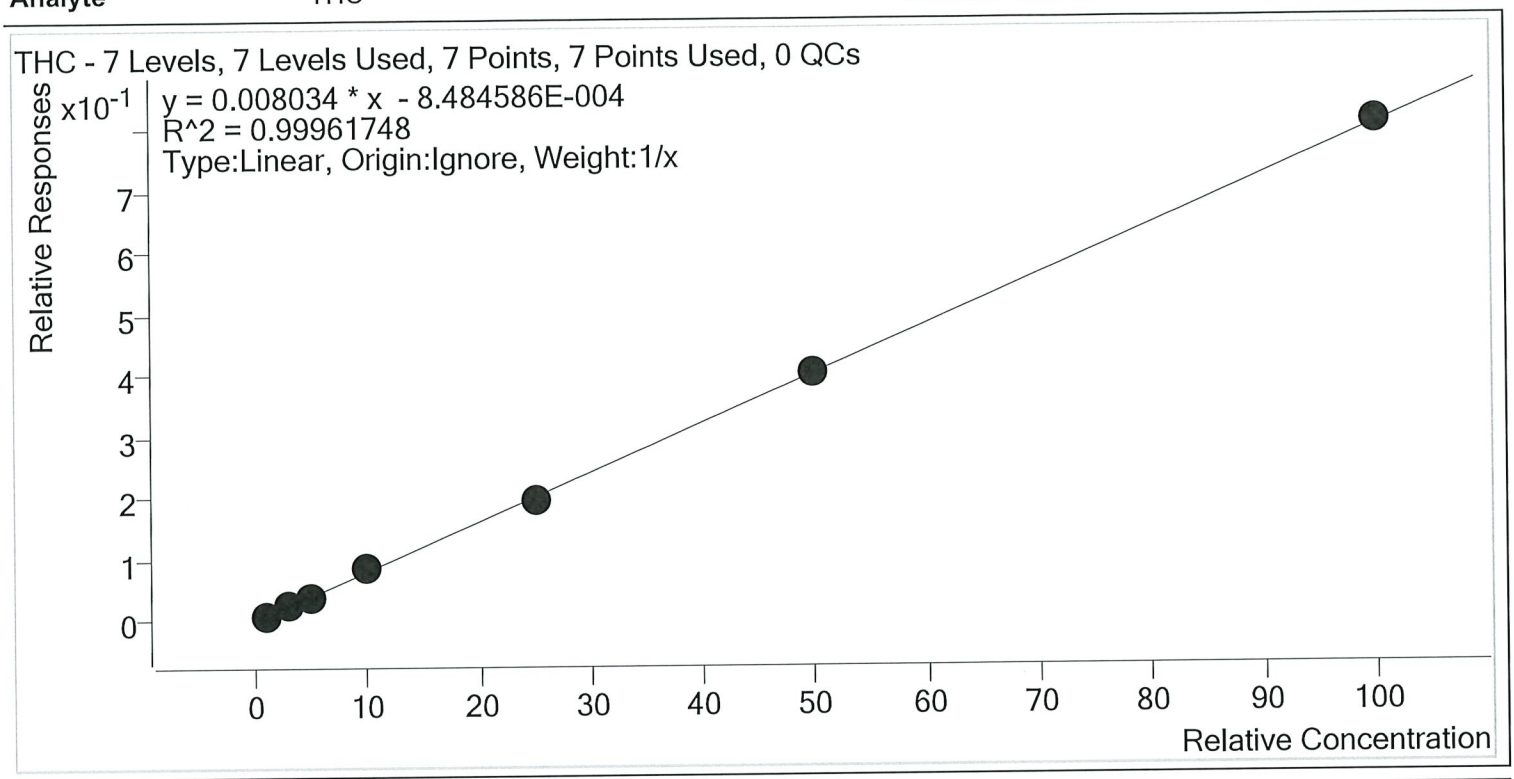
AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Last Cal. Update	11/18/2019 8:13 AM
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	105.9
MJ_Cal 2	2	✓	3.0	3.0	98.8
MJ_Cal 3	3	✓	5.0	4.6	92.9
MJ_Cal 4	4	✓	10.0	10.4	104.2
MJ_Cal 5	5	✓	25.0	24.5	97.9
MJ_Cal 6	6	✓	50.0	49.8	99.5
MJ_Cal 7	7	✓	100.0	100.7	100.7

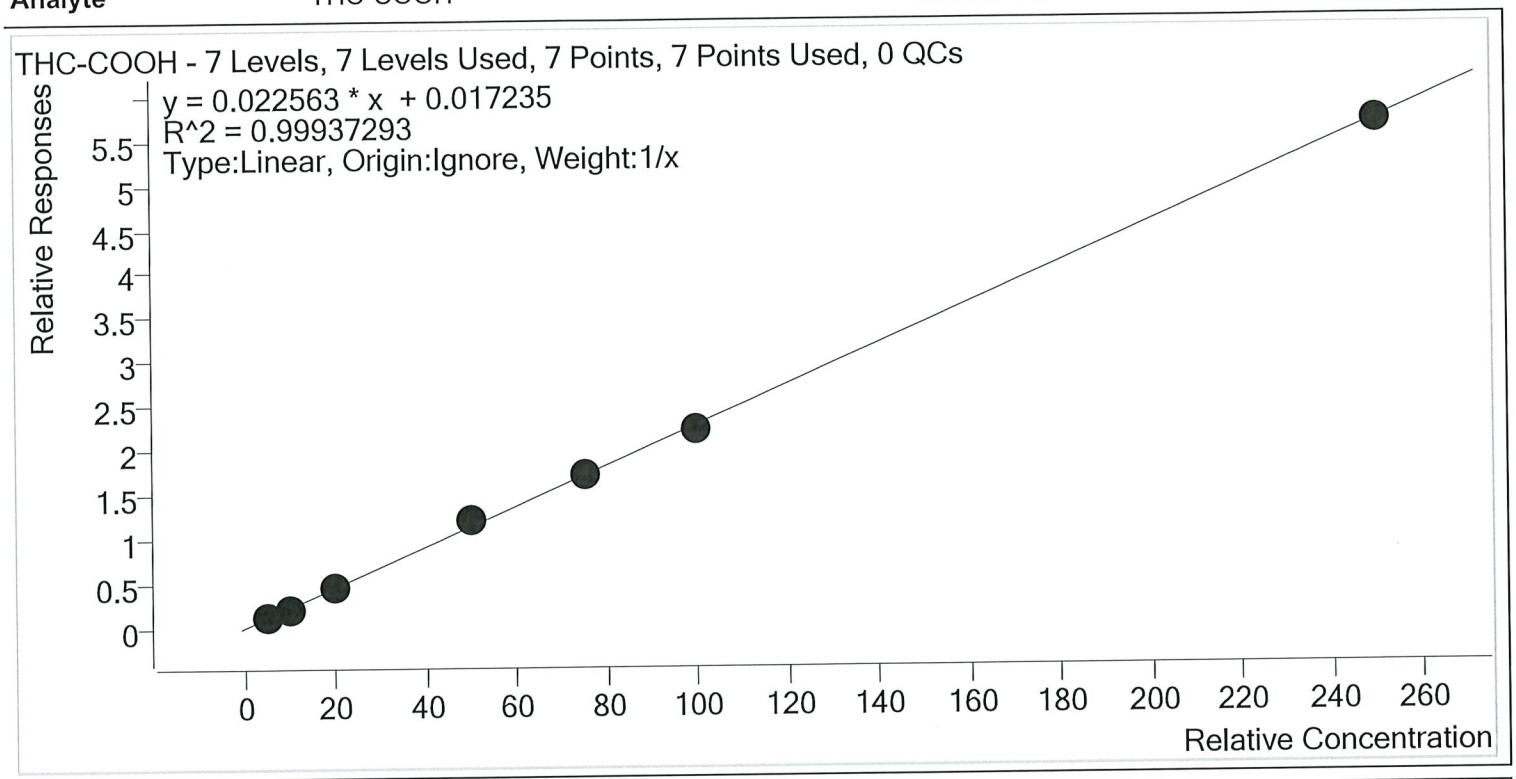
AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin

Last Cal. Update 11/18/2019 8:13 AM

Analyst Name ISP\datastor

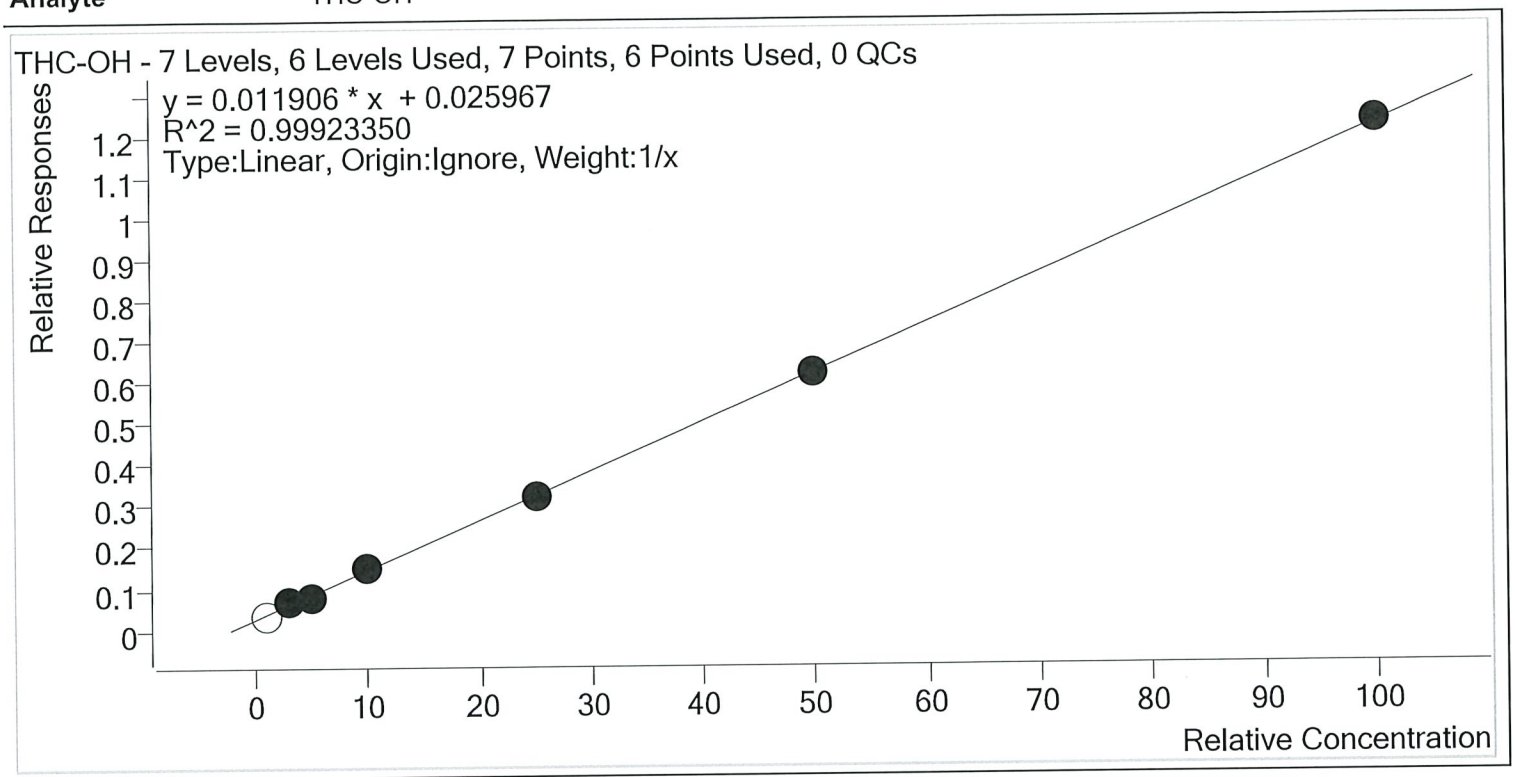
Analyte THC-COOH **Internal Standard** THC-COOH-D9



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ_Cal 1	1	✓	5.0	5.3	106.7
MJ_Cal 2	2	✓	10.0	9.3	93.2
MJ_Cal 3	3	✓	20.0	19.2	95.9
MJ_Cal 4	4	✓	50.0	52.3	104.6
MJ_Cal 5	5	✓	75.0	75.9	101.2
MJ_Cal 6	6	✓	100.0	98.6	98.6
MJ_Cal 7	7	✓	250.0	249.4	99.7

AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Last Cal. Update	11/18/2019 8:13 AM
Analyst Name	ISP\datastor
Analyte	THC-OH
Internal Standard	THC-OH-D3



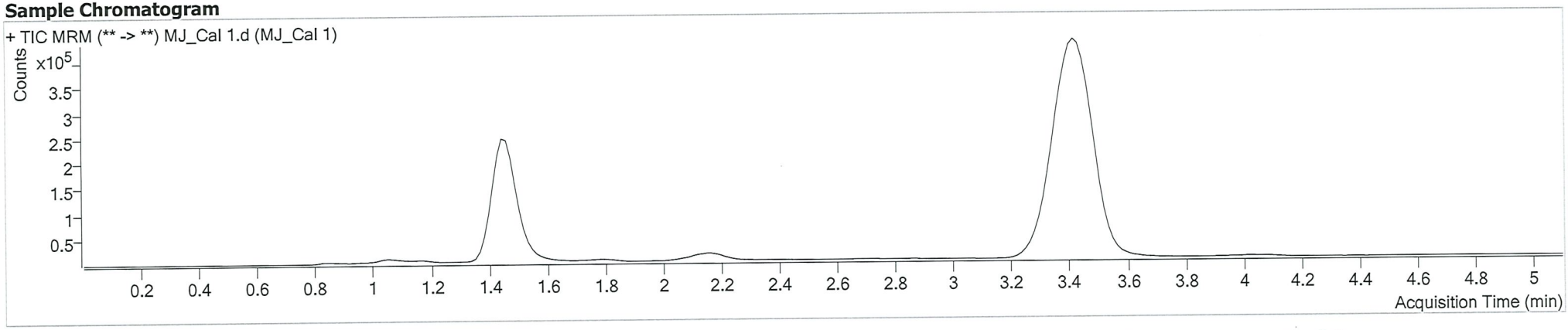
Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ_Cal 1	1	×	1.0	0.7	69.5
MJ_Cal 2	2	✓	3.0	3.3	110.3
MJ_Cal 3	3	✓	5.0	4.4	88.6
MJ_Cal 4	4	✓	10.0	10.2	102.2
MJ_Cal 5	5	✓	25.0	24.7	98.8
MJ_Cal 6	6	✓	50.0	49.8	99.6
MJ_Cal 7	7	✓	100.0	100.5	100.5

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Cal 1.d
Type	Cal	**Sample**	MJ_Cal 1
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-B6	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 7:44:03 PM		
Sample Info.			

Sample Chromatogram



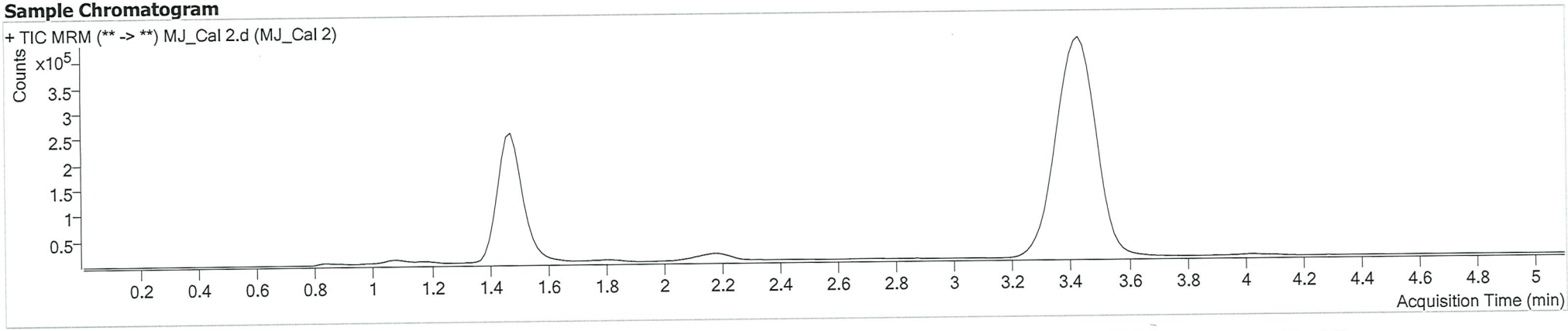
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.435	32264	128.04	30.5	15.27	4210422	1.0595 ng/ml
THC-COOH	1.504	39255	∞	49.3	222.84	285274	5.3350 ng/ml
THC-OH	1.513 **High**	37994	∞	6.2 **Low**	10.28	1109545	0.6952 ng/ml

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Cal 2.d
Type	Cal	**Sample**	MJ_Cal 2
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-C6	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 7:51:48 PM		
Sample Info.			

Sample Chromatogram



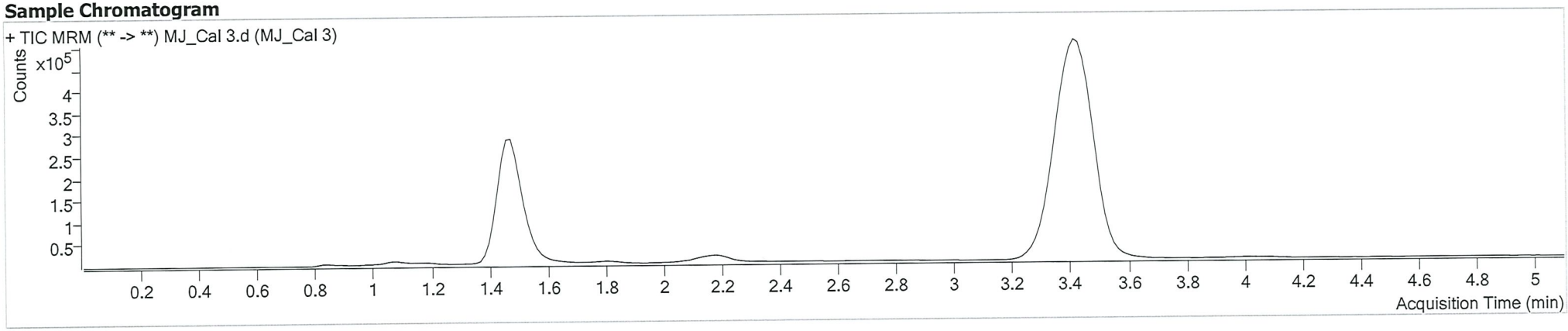
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.450	92710	290.08	28.8	127.01	4035611	2.9653 ng/ml
THC-COOH	1.519	63088	265.51	58.3	221.09	277226	9.3223 ng/ml
THC-OH	1.483	70773	∞	10.2	200.35	1082932	3.3081 ng/ml

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Cal 3.d
Type	Cal	**Sample**	MJ_Cal 3
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-D6	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 7:59:23 PM		
Sample Info.			

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.435	164127	∞	28.9	218.28	4500799	4.6449 ng/ml
THC-COOH	1.519	129582	∞	57.0	662.01	287964	19.1803 ng/ml
THC-OH	1.483	89521	∞	11.0	73.10	1137274	4.4303 ng/ml

AM #27 Cannabinoids Quant. Results

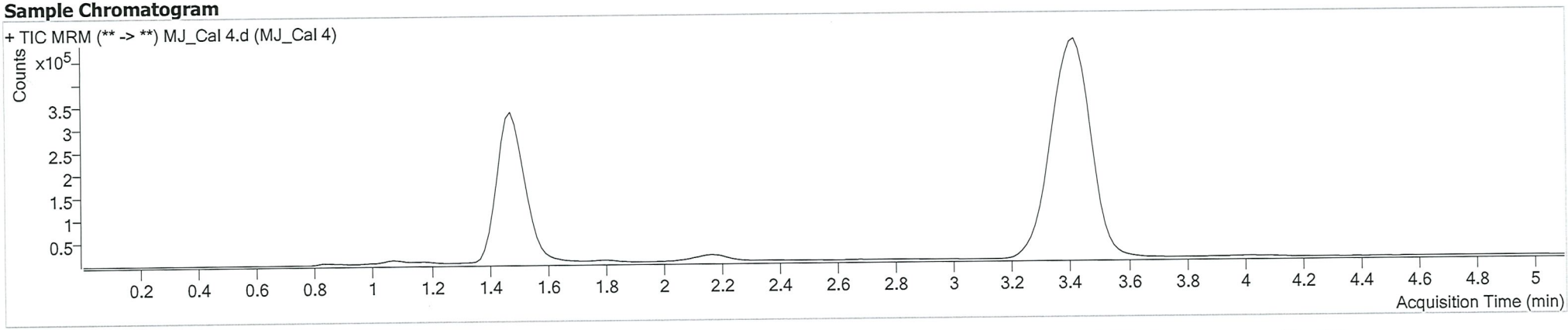
Batch results D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update 11/18/2019 8:13:38 AM

Instrument Falco
Type Cal
Acq. Method AM 27 THC quant.m
Sample Position P3-E6
Injection Volume 10
Acq. Date-Time 11/8/2019 8:06:57 PM
Sample Info.

Data File MJ_Cal 4.d
Sample MJ_Cal 4

Comment

Sample Chromatogram



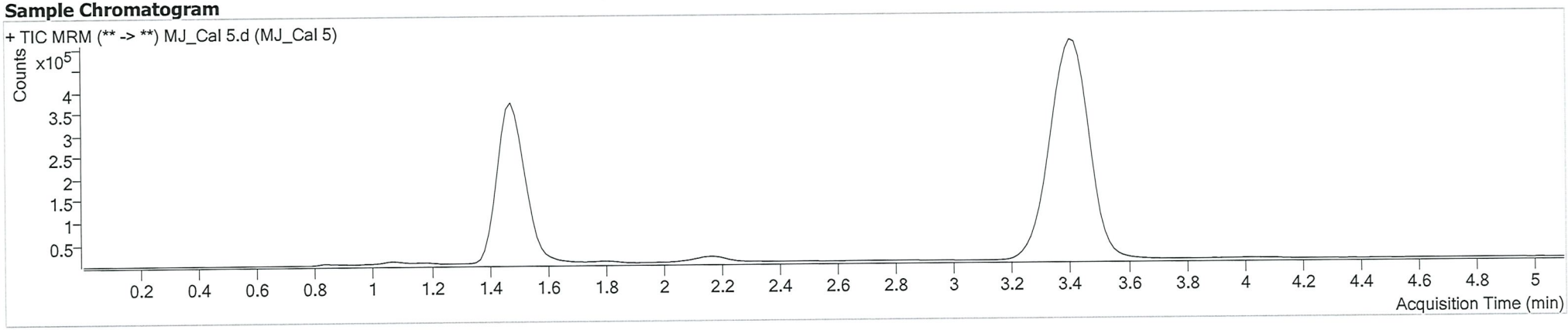
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.420	346623	711.78	27.6	∞	4183144	10.4202 ng/ml
THC-COOH	1.519	337675	631.84	59.8	2206.33	281936	52.3194 ng/ml
THC-OH	1.468	163966	231.35	12.1	85.78	1110618	10.2189 ng/ml

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Cal 5.d
Type	Cal	**Sample**	MJ_Cal 5
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-F6	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 8:14:32 PM		
Sample Info.			

Sample Chromatogram



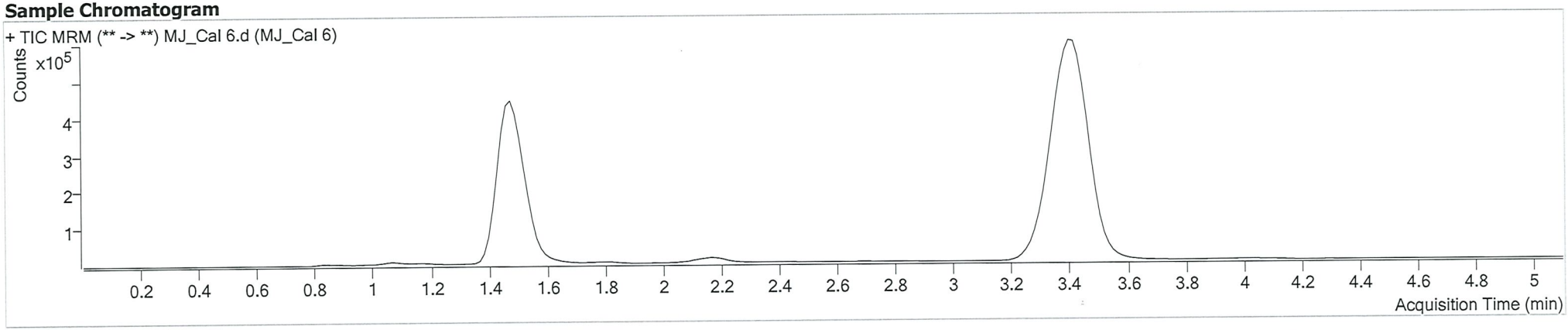
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.420	747926	∞	26.8	702.49	3820372	24.4752 ng/ml
THC-COOH	1.504	442361	1142.87	59.7	4493.41	255689	75.9147 ng/ml
THC-OH	1.468	324817	521.37	13.2	557.82	1014985	24.6976 ng/ml

AM #27 Cannabinoids Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update	11/18/2019 8:13:38 AM

Instrument	Falco	**Data File**	MJ_Cal 6.d
Type	Cal	**Sample**	MJ_Cal 6
Acq. Method	AM 27 THC quant.m		
Sample Position	P3-G6	**Comment**	
Injection Volume	10		
Acq. Date-Time	11/8/2019 8:22:07 PM		
Sample Info.			

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.420	1459241	13925.71	26.6	2270.90	3657155	49.7738 ng/ml
THC-COOH	1.504	542895	∞	60.9	4213.54	242211	98.5779 ng/ml
THC-OH	1.468	602451	∞	13.9	∞	973449	49.7989 ng/ml

AM #27 Cannabinoids Quant. Results

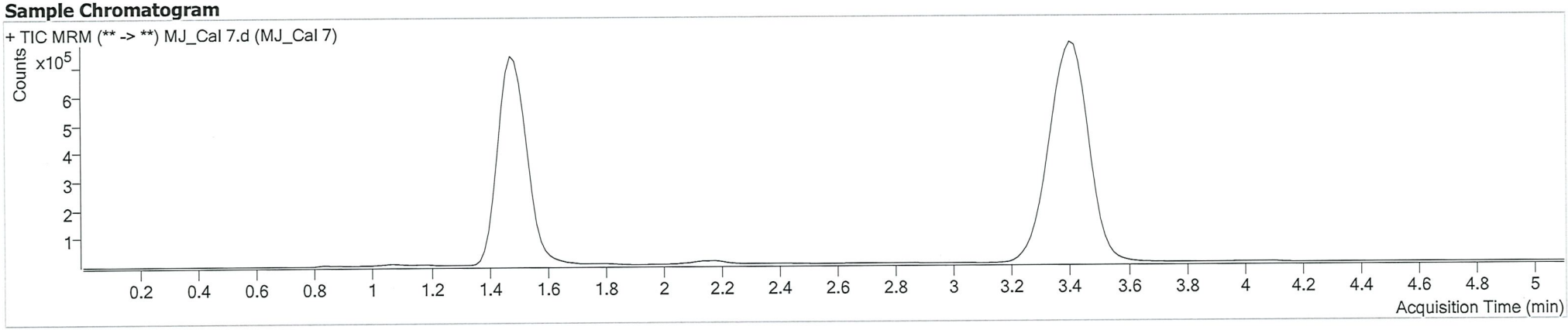
Batch results D:\MassHunter\Data\2019\AM 27\110819 THCQ TS Meth Test SP\QuantResults\THCQ TS wklst 3818.batch.bin
Calibration Last Update 11/18/2019 8:13:38 AM

Instrument Falco
Type Cal
Acq. Method AM 27 THC quant.m
Sample Position P3-H6
Injection Volume 10
Acq. Date-Time 11/8/2019 8:29:42 PM
Sample Info.

Data File MJ_Cal 7.d
Sample MJ_Cal 7

Comment

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.
THC	3.420	2946889	6930.58	27.0	∞	3647982	100.6612 ng/ml
THC-COOH	1.504	1329480	∞	60.5	5380.55	235588	249.3504 ng/ml
THC-OH	1.468	1208435	∞	13.7	6452.95	988020	100.5461 ng/ml