APPROVED
By Anne Nord at 8:14 am, Dec 11, 2019

12/6/2019

Worklist: 3872

LAB_CASE	ITEM	ITEM_TYPE	DESCRIPTION	
M2019-5018	5	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3407	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3510	2	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3535	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3540	3	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3606	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3607	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3608	1	UCK	AM 27 Urine Cannabinoids Confirmation by LC-QQQ	
P2019-3676	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: 12/05/2019
Plate lot#: 190716
Mobile phase A: 0.1% Formic Acid in LCMS Water
Blank Blood Lot: 445283-3
LCMS-QQQ ID: 069901

Analyst: Celena Shrum
Plate Expiration: 01/16/2020
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. 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: #3**
☒ 3. Place on shaking incubator at ambient temp., 900rpm for 15 minutes. *Shaker ID: 067105*
☒ 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 **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)*** 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.
☒ 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? (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: Curve ranges are THC: 1-100, THC-COOH: 10-250, THC-OH: 3-100

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: 111519)

200 ul of methanol external control solution was added to 9800 ul of urine.
Approximately 20ng/mL of each compound.

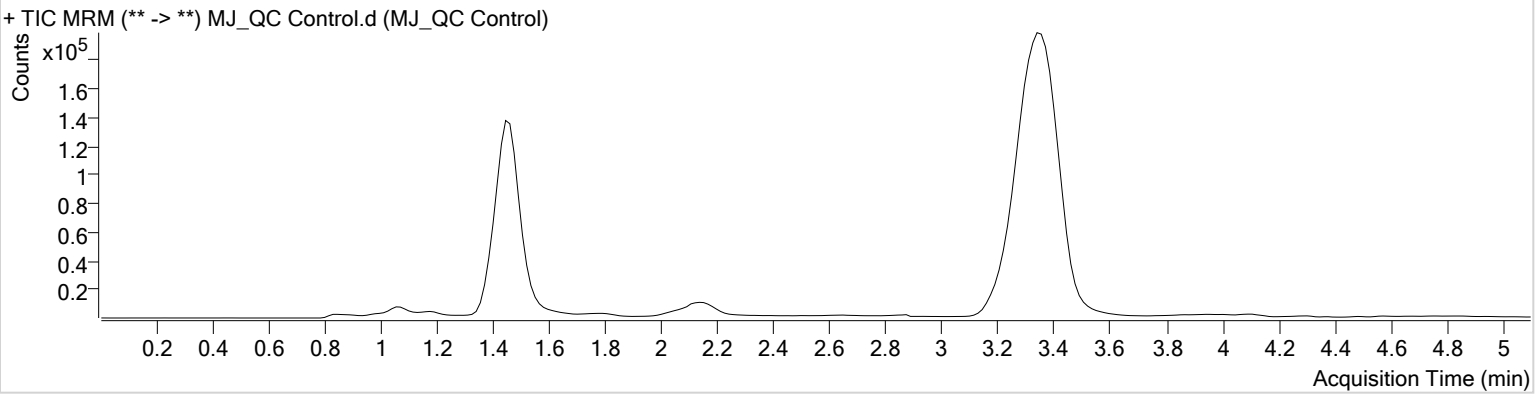
Component	*Source*	*Source Lot Number*
Negative Urine	Pocatello Lab	POC031319
Methanol External Control Solution	-	WS041619
Prepared:	11/15/19	
Prepared by:	Celena Shrum	
Expires:	01/31/2020	

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_QC Control.d
Type	Sample	**Sample**	MJ_QC Control
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-H1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:49:08 AM		
Sample Info.			

Sample Chromatogram



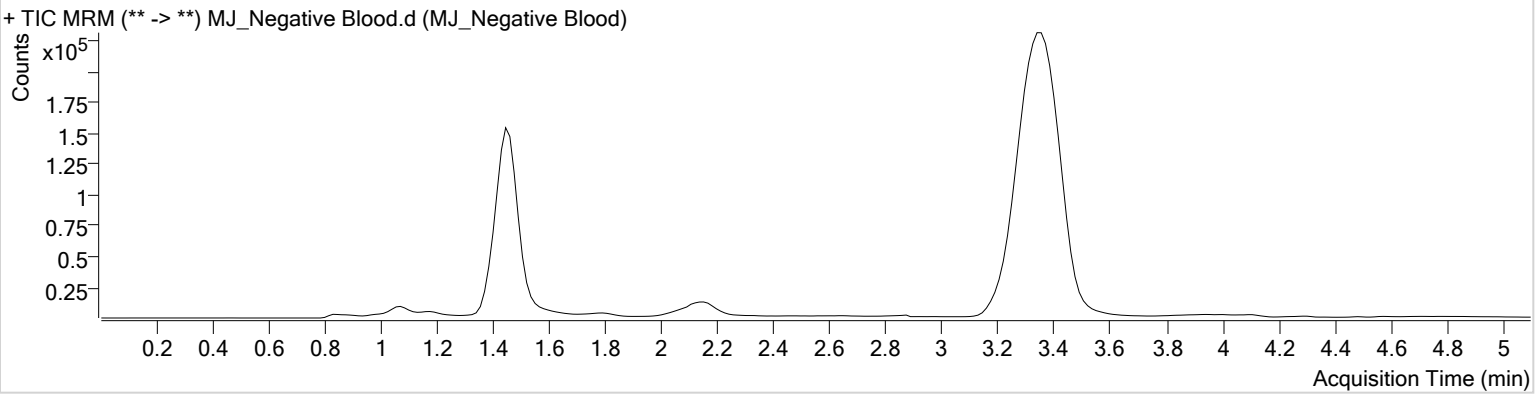
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	71514	∞	50.0	999.04	184065	14.5782	ng/ml
THC-OH	1.453	44041	∞	9.9	23.50	514661	4.6787	ng/ml
THC	3.360	64635	258.78	27.2	43.60	1994665	4.2449	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Negative Blood.d
Type	Sample	**Sample**	MJ_Negative Blood
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-A2	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 1:04:20 AM		
Sample Info.			

Sample Chromatogram



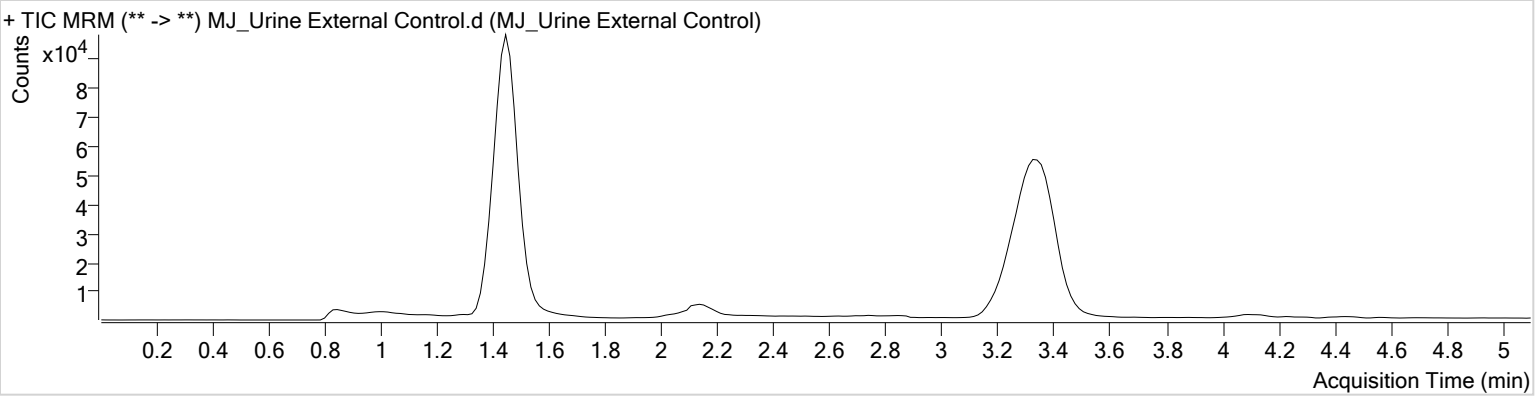
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.429 Low	14417	∞			216989	0.8338	ng/ml Low

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Urine External Control.d
Type	Sample	**Sample**	MJ_Urine External Control
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-C2	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 1:34:43 AM		
Sample Info.			

Sample Chromatogram



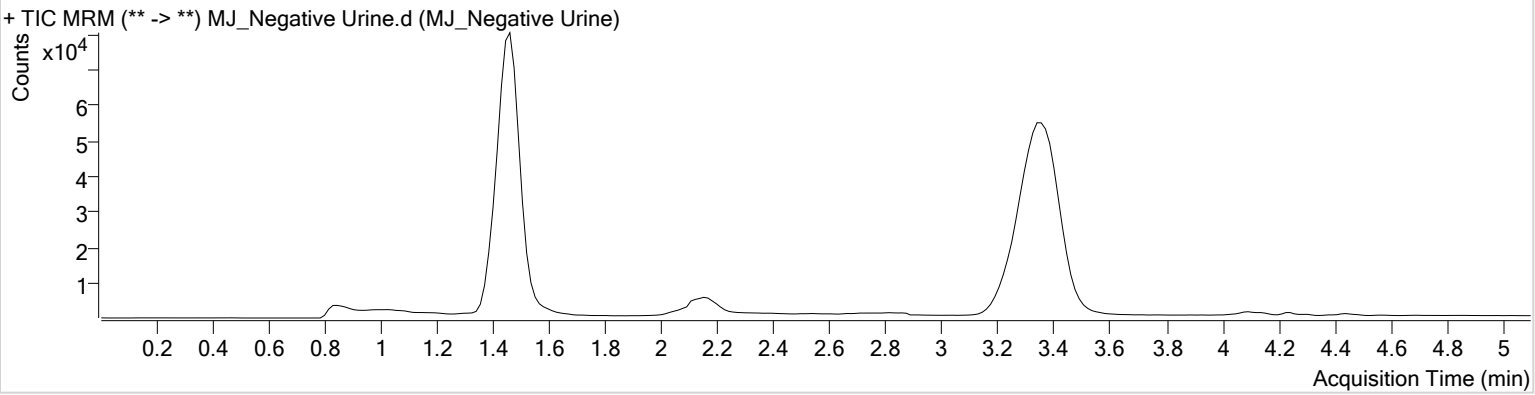
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	36574	630.45	64.3	786.25	127976	10.1942	ng/ml
THC-OH	1.453	52264	∞	13.5	107.88	345023	9.9271	ng/ml
THC	3.360	39545	169.89	27.1	26.09	532455	9.5380	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results	D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update	12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Negative Urine.d
Type	Sample	**Sample**	MJ_Negative Urine
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-B2	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 1:19:30 AM		
Sample Info.			

Sample Chromatogram



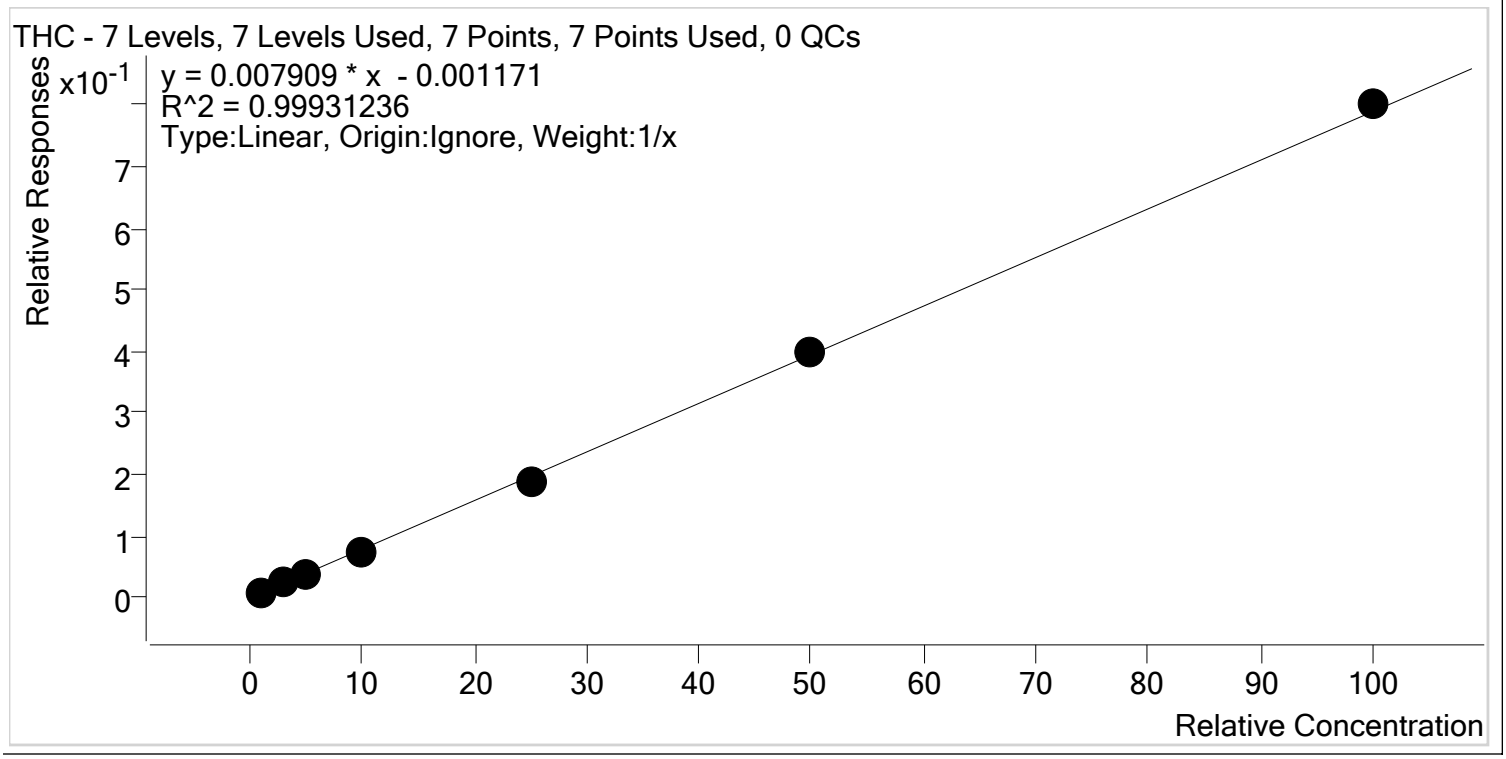
AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin

Last Cal. Update 12/10/2019 12:01 PM

Analyst Name ISP\Datastor

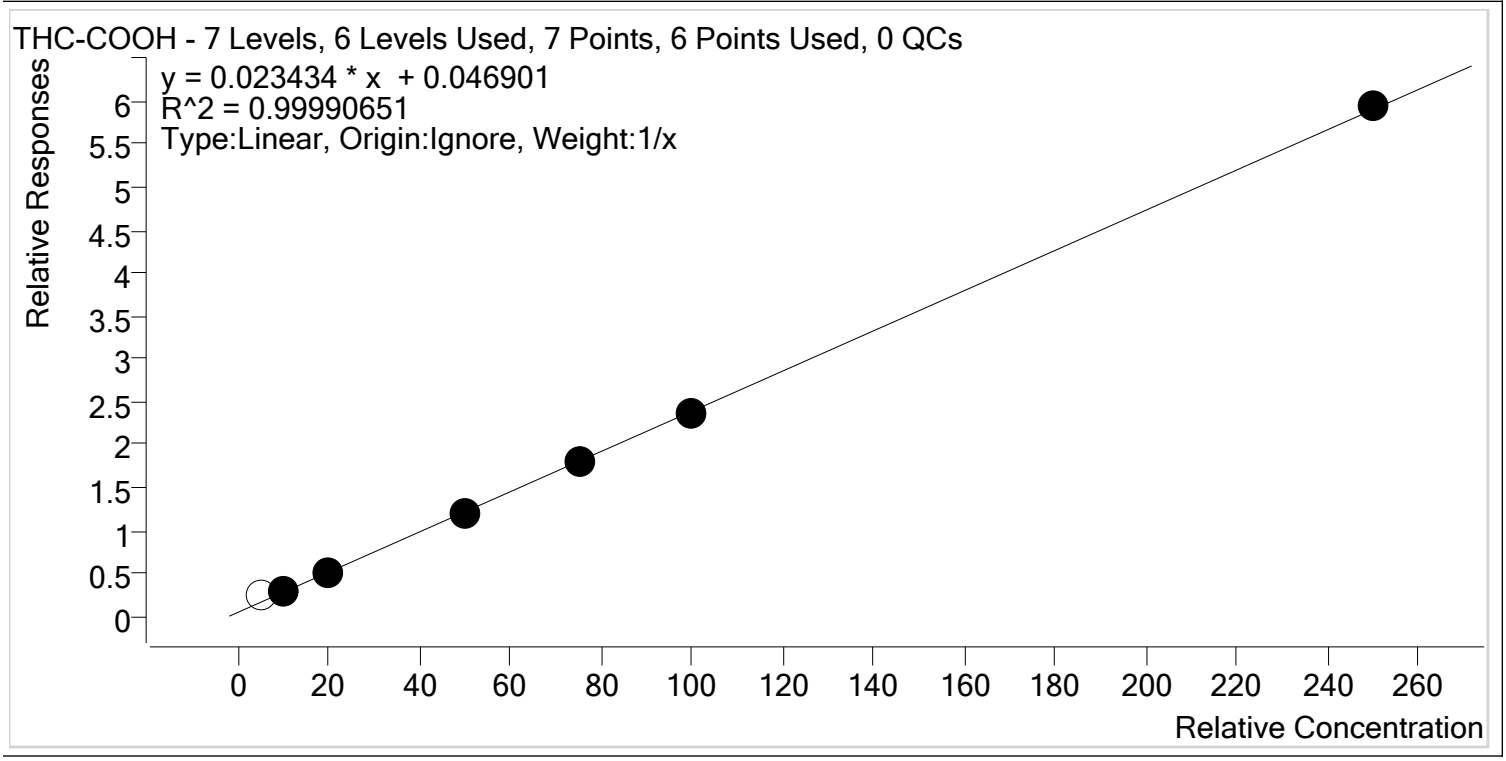
Analyte THC **Internal Standard** THC-D3



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ_Cal 1	1	✔	1.0	1.1	112.0
MJ_Cal 2	2	✔	3.0	3.0	98.6
MJ_Cal 3	3	✔	5.0	4.8	95.7
MJ_Cal 4	4	✔	10.0	9.7	96.6
MJ_Cal 5	5	✔	25.0	23.8	95.3
MJ_Cal 6	6	✔	50.0	50.2	100.4
MJ_Cal 7	7	✔	100.0	101.5	101.5

AM #27 Cannabinoids Quant. Calibration Curve Report

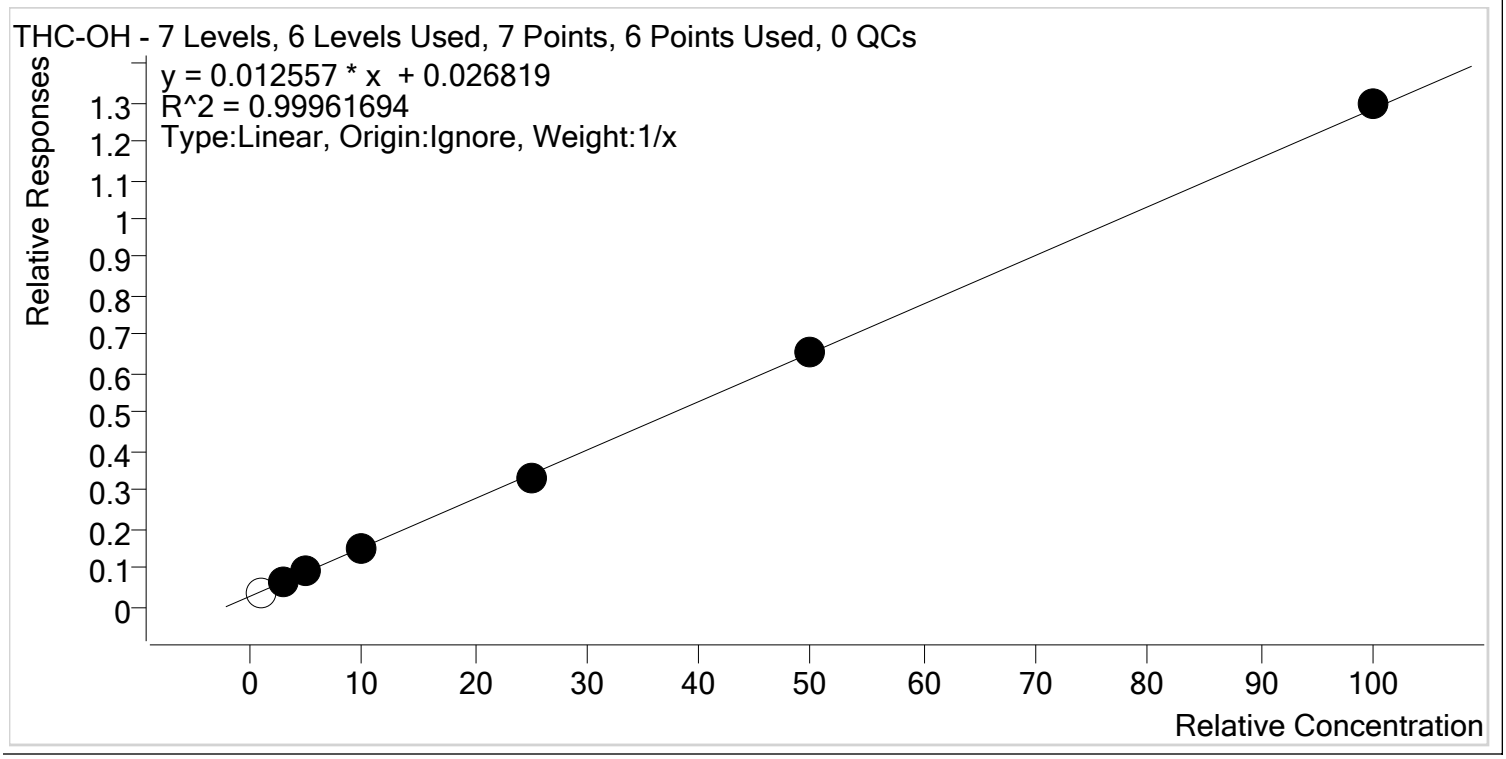
Batch results	D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Last Cal. Update	12/10/2019 12:01 PM
Analyst Name	ISP\Datastor
Analyte	THC-COOH
Internal Standard	THC-COOH-D9



Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ_Cal 1	1	✗	5.0	8.9	177.1
MJ_Cal 2	2	✔	10.0	10.2	102.0
MJ_Cal 3	3	✔	20.0	19.9	99.5
MJ_Cal 4	4	✔	50.0	49.7	99.4
MJ_Cal 5	5	✔	75.0	74.6	99.5
MJ_Cal 6	6	✔	100.0	98.9	98.9
MJ_Cal 7	7	✔	250.0	251.6	100.7

AM #27 Cannabinoids Quant. Calibration Curve Report

Batch results	D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Last Cal. Update	12/10/2019 12:01 PM
Analyst Name	ISP\Datastor
Analyte	THC-OH
Internal Standard	THC-OH-D3



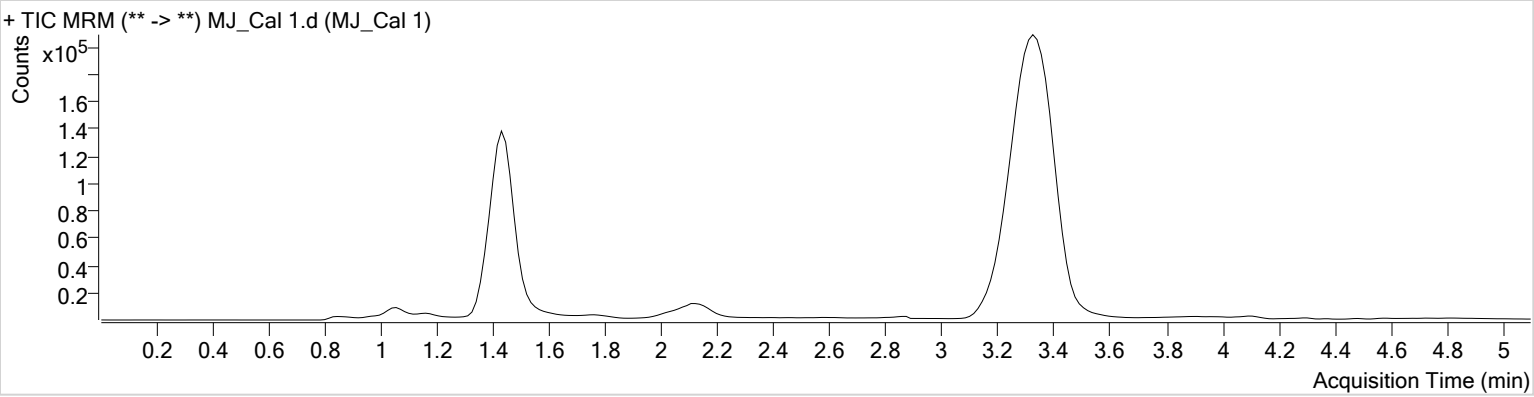
Sample	Level	Enabled	Expected Concentration	Final Concentration	Accuracy
MJ_Cal 1	1	✗	1.0	0.8	82.2
MJ_Cal 2	2	✔	3.0	3.0	100.9
MJ_Cal 3	3	✔	5.0	5.2	103.5
MJ_Cal 4	4	✔	10.0	9.9	98.6
MJ_Cal 5	5	✔	25.0	24.0	96.2
MJ_Cal 6	6	✔	50.0	49.9	99.9
MJ_Cal 7	7	✔	100.0	101.0	101.0

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 1.d
Type	Cal	**Sample**	MJ_Cal 1
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-A1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/5/2019 11:48:17 PM		
Sample Info.			

Sample Chromatogram



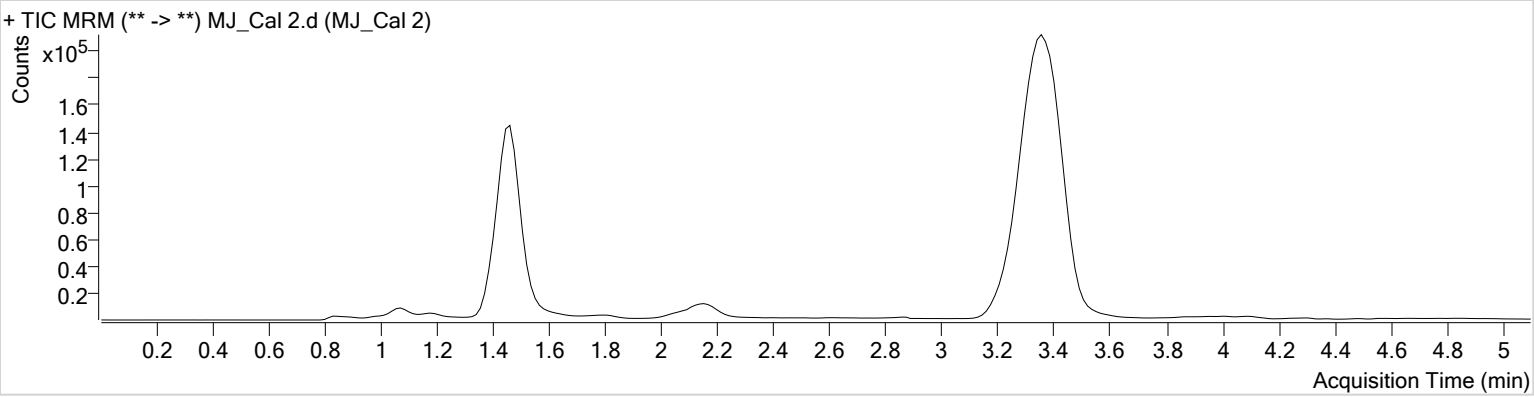
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.474	51527	∞	26.1 **Low**	93.51	202518	8.8560	ng/ml **Low**
THC-OH	1.483	21563	∞	6.2 **Low**	7.84 **Low**	580600	0.8218	ng/ml **Low**
THC	3.360	17248	76.86	26.1	17.39	2243775	1.1200	ng/ml **Low**-OK

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 2.d
Type	Cal	**Sample**	MJ_Cal 2
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-B1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/5/2019 11:56:02 PM		
Sample Info.			

Sample Chromatogram



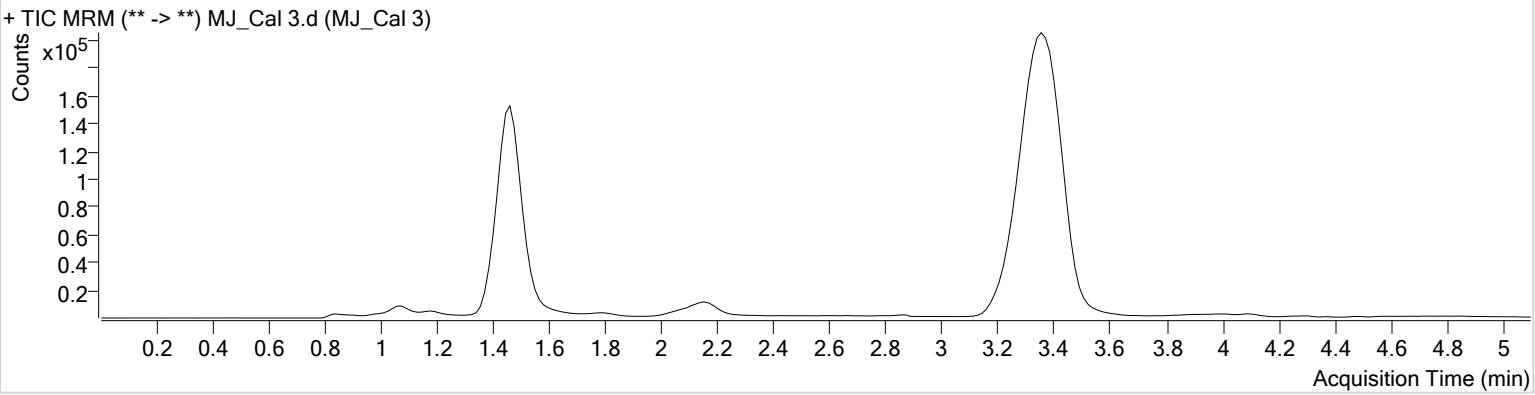
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.		
THC-COOH	1.489	56831	∞	46.8	332.76	198791	10.1980	ng/ml	
THC-OH	1.468	36679	∞	9.6	21.36	565914	3.0257	ng/ml	
THC	3.375	48191	93.62	33.1	50.88	2168121	2.9583	ng/ml	**Low**-OK

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 3.d
Type	Cal	**Sample**	MJ_Cal 3
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-C1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:03:37 AM		
Sample Info.			

Sample Chromatogram



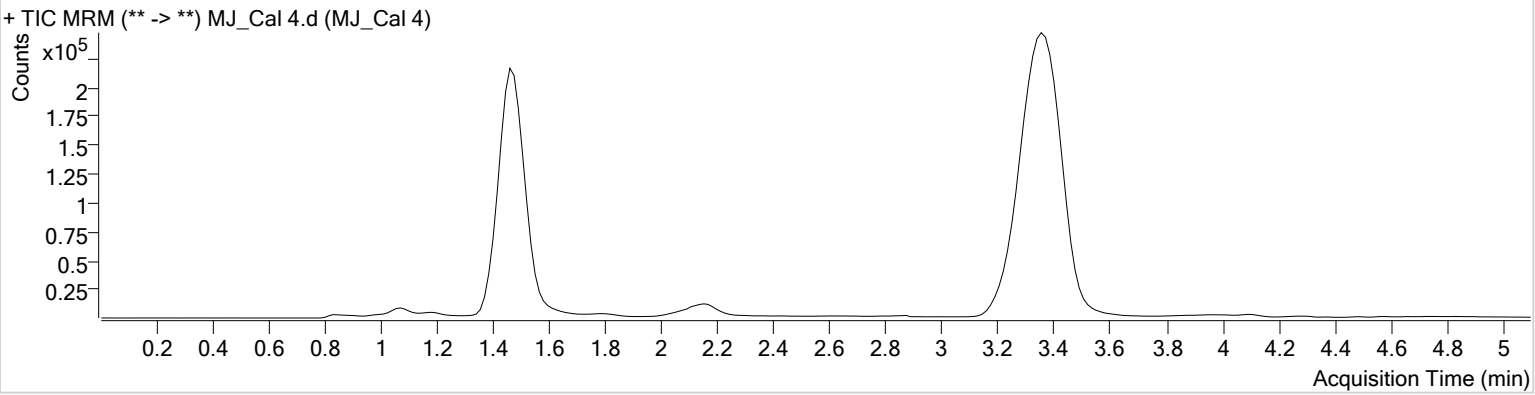
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	98624	∞	52.8	1852.47	192137	19.9027	ng/ml
THC-OH	1.468	50081	∞	9.6	23.26	545442	5.1760	ng/ml
THC	3.375	75259	142.58	30.4	∞	2052489	4.7840	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 4.d
Type	Cal	**Sample**	MJ_Cal 4
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-D1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:11:11 AM		
Sample Info.			

Sample Chromatogram



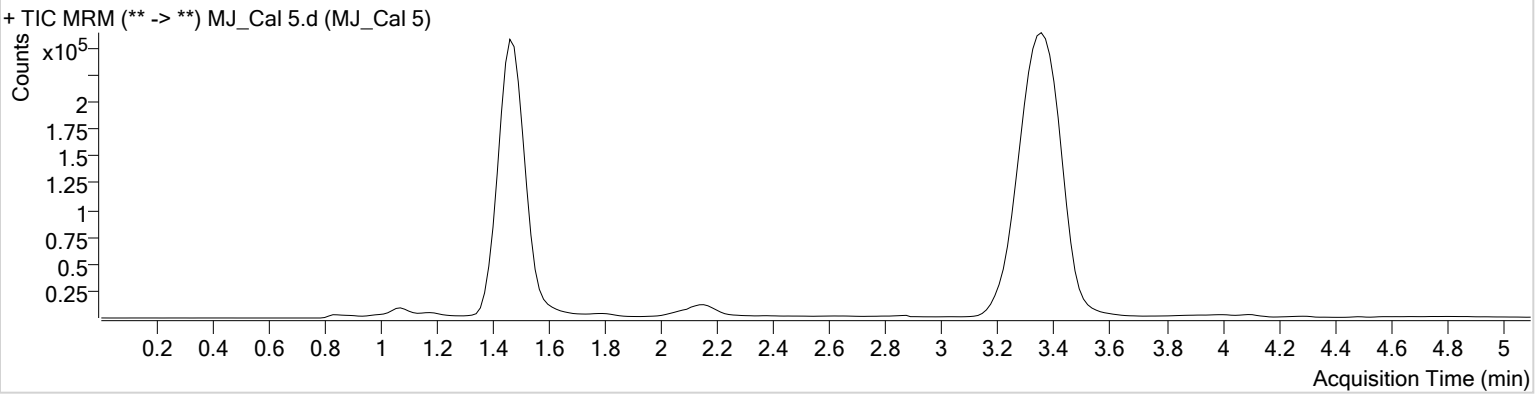
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	259879	∞	57.1	∞	214455	49.7104	ng/ml
THC-OH	1.468	94378	∞	11.6	128.53	626376	9.8630	ng/ml
THC	3.390	175195	650.66	27.7	225.79	2329106	9.6582	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 5.d
Type	Cal	**Sample**	MJ_Cal 5
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-E1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:18:46 AM		
Sample Info.			

Sample Chromatogram



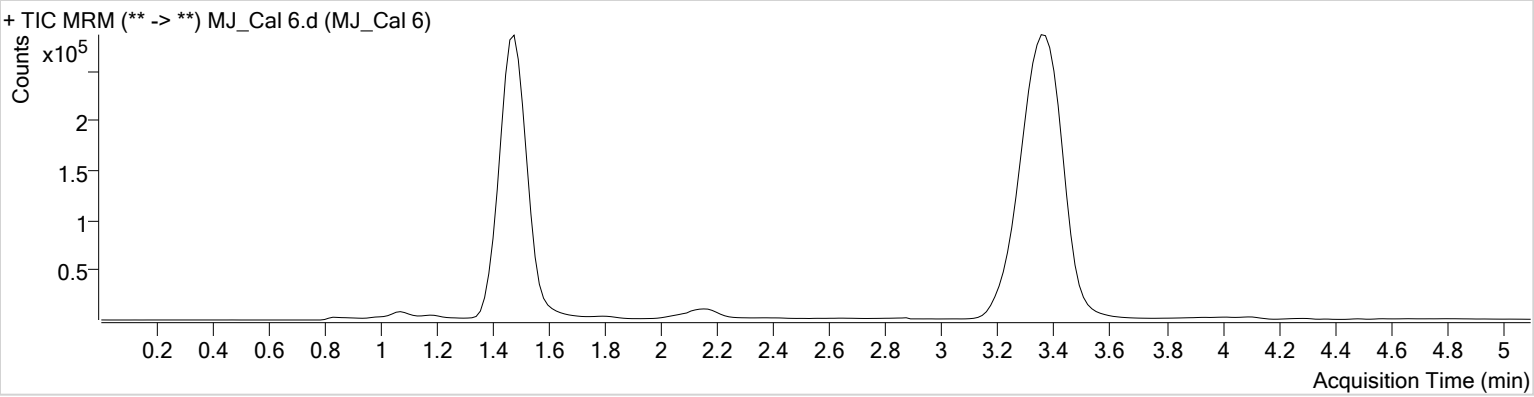
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	363585	417.50	58.6	∞	202464	74.6312	ng/ml
THC-OH	1.453	199279	210.45	12.8	323.16	606207	24.0425	ng/ml
THC	3.375	418851	528.78	27.6	276.33	2236644	23.8244	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 6.d
Type	Cal	**Sample**	MJ_Cal 6
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-F1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:26:21 AM		
Sample Info.			

Sample Chromatogram



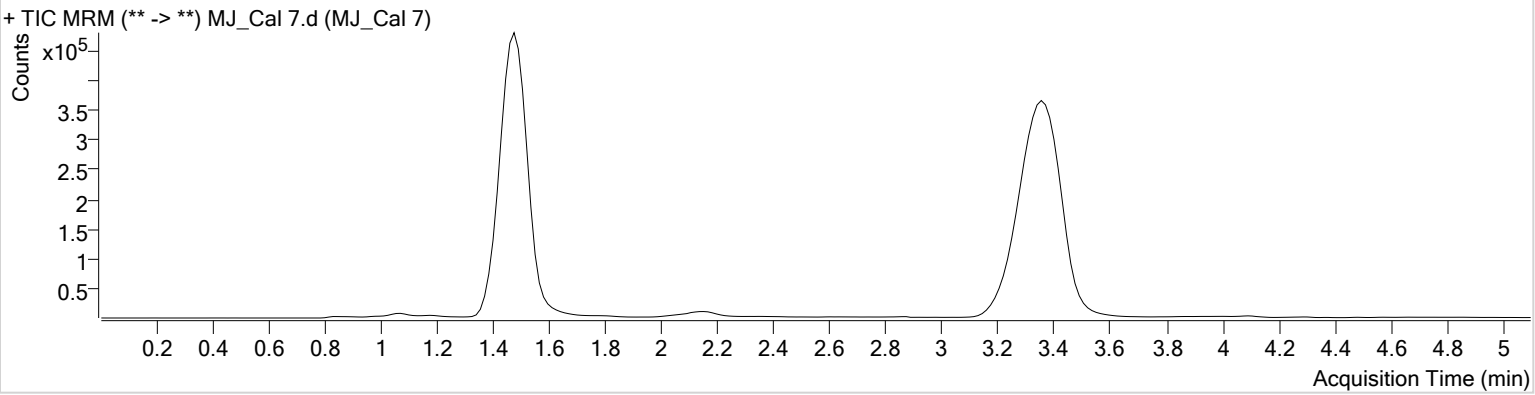
Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.504	433422	∞	58.6	2856.61	183260	98.9234	ng/ml
THC-OH	1.468	352110	∞	13.2	365.83	538555	49.9294	ng/ml
THC	3.375	793463	1523.58	27.0	913.02	2005104	50.1793	ng/ml

AM #27 Cannabinoid Quant. Results

Batch results D:\MassHunter\Data\2019\AM 27-28\AM 27-28 Urine Run 120519 CS\QuantResults\THCQ.batch.bin
Calibration Last Update 12/10/2019 12:01:59 PM

Instrument	Falco	**Data File**	MJ_Cal 7.d
Type	Cal	**Sample**	MJ_Cal 7
Acq. Method	AM 27 THC quant.m	**Operator**	Celena Shrum
Sample Position	P3-G1	**Comment**	
Injection Volume	10		
Acq. Date-Time	12/6/2019 12:33:56 AM		
Sample Info.			

Sample Chromatogram



Name	RT	Resp.	S/N	Ratio	S/N	ISTD Resp.	Final Conc.	
THC-COOH	1.489	986554	∞	59.2	4176.28	165983	251.6342	ng/ml
THC-OH	1.453	659185	667.26	13.8	890.37	509158	100.9633	ng/ml
THC	3.375	1537684	∞	26.4	883.22	1918623	101.4759	ng/ml