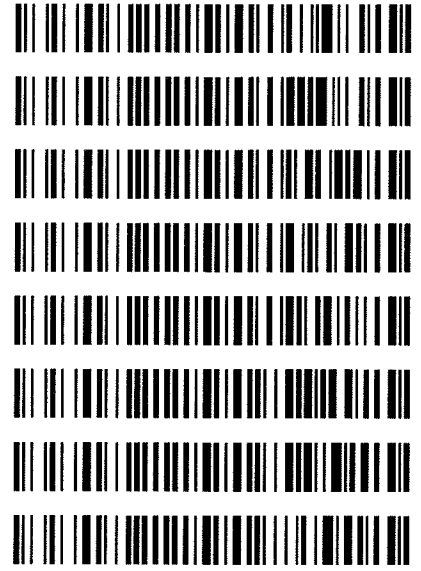


Boyle

Worklist: 2274

<u>LAB_CASE</u>	<u>ITEM</u>	<u>TASK_ID</u>	<u>DESCRIPTION</u>
C2018-0234	1	111055	AM 27 Blood THC Quant by LC-QQQ
C2018-0264	1	111054	AM 27 Blood THC Quant by LC-QQQ
C2018-0266	1	111053	AM 27 Blood THC Quant by LC-QQQ
C2018-0315	1	111052	AM 27 Blood THC Quant by LC-QQQ
C2018-0317	1	111051	AM 27 Blood THC Quant by LC-QQQ
C2018-0497	2	111050	AM 27 Blood THC Quant by LC-QQQ
C2018-0505	1	111049	AM 27 Blood THC Quant by LC-QQQ
C2018-0525	1	111048	AM 27 Blood THC Quant by LC-QQQ



[Handwritten signature]

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

Extraction Date: 3-22-18

Analyst: Anne Nord

Plate lot#: 0515037

Plate Expiration: 9/28/2018

Mobile phase A: 0.1% Formic Acid in LCMS Water
MTBE

Mobile phase B: 0.1% Formic acid in Acetonitrile
LCMS Methanol Hexane

Blank Blood Lot: 17J0718

Column: UCT Selectra DA 100 x 2.1mm 3um

LCMS-QQQ ID: 62340

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 (calibrated pipette) Pipette ID: k52558g** in wells of analytical (standards) plate.
- 3. Place on shaking incubator at ambient temp., 900rpm for 15 minutes. *Shaker ID: 66759*
- 4. Pipette **500µL 0.1% formic acid in water** 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: 66792
- 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: 66819
- 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: 03222018 cann quant Batch Name: 32218 cann quant
- 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:



**Idaho State Police
Forensic Services
Toxicology Discipline**

Request for Departure from an Analytical Method

Date of Request

03/23/18

Forensic Scientist

Anne Nord

Analytical Method

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

4.3.2.4 For calibrators and controls 10 ng and below the accuracy must be within 30%, for calibrators and controls greater than 10 ng/mL the accuracy must be within 20%. If the control over 10 ng falls outside the accuracy range at the analyst's discretion the compound may be reported qualitatively.

Request

I am requesting a deviation to report the results for THC and THC-OH from worklist 2274 qualitatively due to the external control concentrations of THC being outside the accuracy range of 30% with a value of 6.16 ng/ml.

Discipline Leader Review

Departure approved

Comments:

Departure Not Approved

Comments:

Celena Shrum

Date: 03/23/2018

Celena Shrum
Toxicology Discipline Lead



Toxicology AM method 27 external prep information
working solution 1 ug/ml in meoh C-THC, THC-OH, THC
Stock solution 1mg/ml 10 ul THC, 100 ug/ml 100 ul each THC-OH, C-THC in 9880 ul meOH
Ppd 3/19/18 Exp: 9/19/18 lot 91918 by AMN

Drug	lot (cerilliant)	expiration
C-THC	FE07171501	9/1/2020
THC-OH	FE07221601	7/1/2021
THC	FE01041701	3/1/2022

AM 27 control 100 ul working solution lot (91918) in 9900 ul blood lot (17J20718)
ppd 3/19/18 Exp 6/19/18 lot 61918 Concentration 10 ng/ml each by AMN

ISP FORENSICS - Cd'A Instrument # 62340

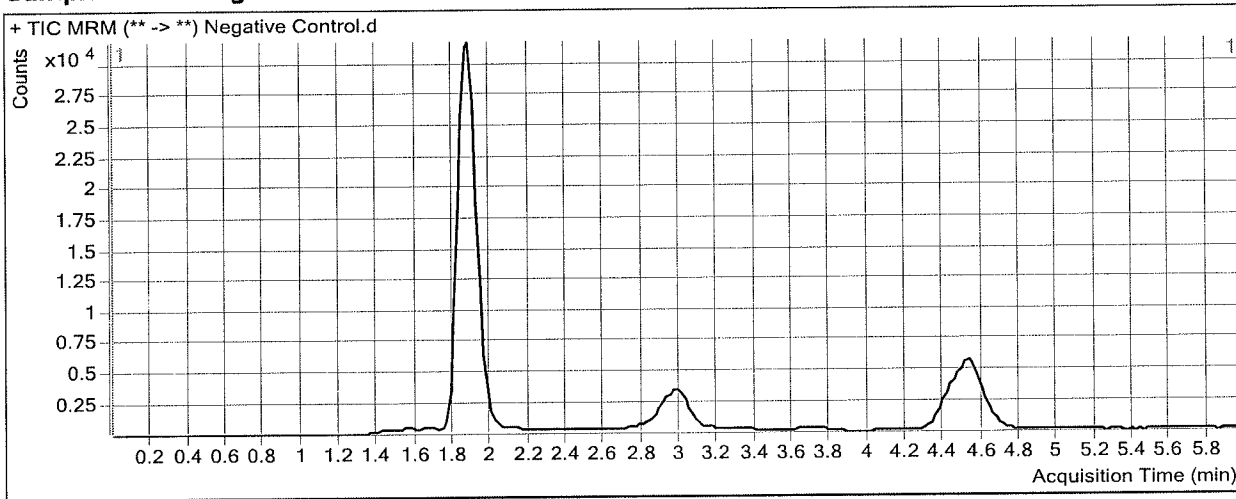
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 15:12 **Data File** Negative Control.d
Sample Type Sample **Sample Name** Negative Control
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-A2 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	2.075	389	170596	0.0023	0.1075

ISP FORENSICS - Cd'A Instrument # 62340

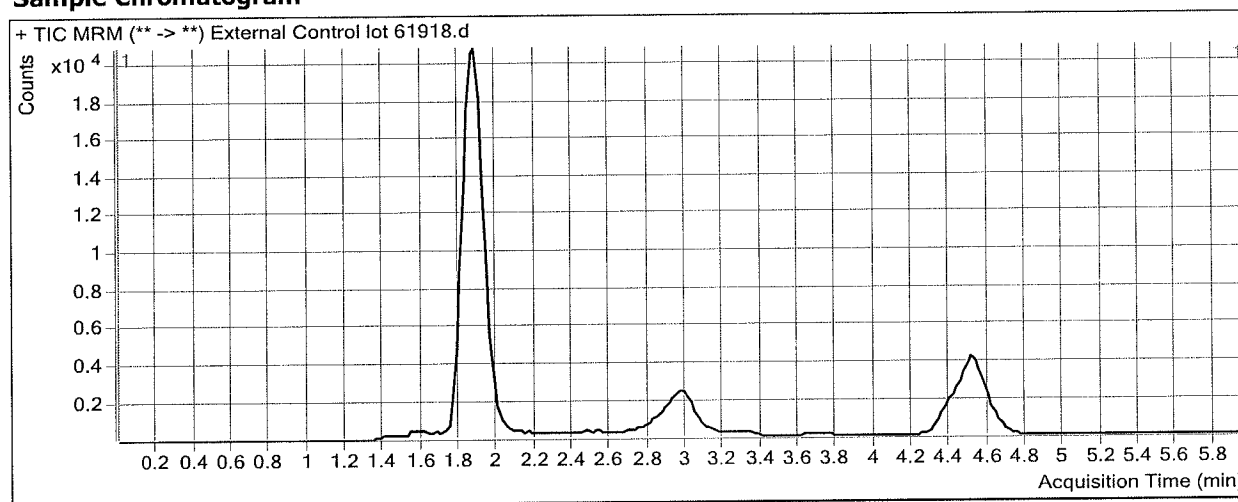
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time	2018-03-22 15:36	Data File	External Control lot 61918.d
Sample Type	QC	Sample Name	External Control lot 61918
Dilution	1	Acq Method	AM 27 Quant THC 7-2017.m
Position	P1-B2	Sample Info	
Inj Vol	-1	Comment	AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.895	8061	109805	0.0734	7.0242
THC-COOH	THC-COOH-d9	1.945	6182	35787	0.1727	8.4059
THC	THC-d3	4.531	3866	46302	0.0835	6.1635

ISP FORENSICS - Cd'A Instrument # 62340

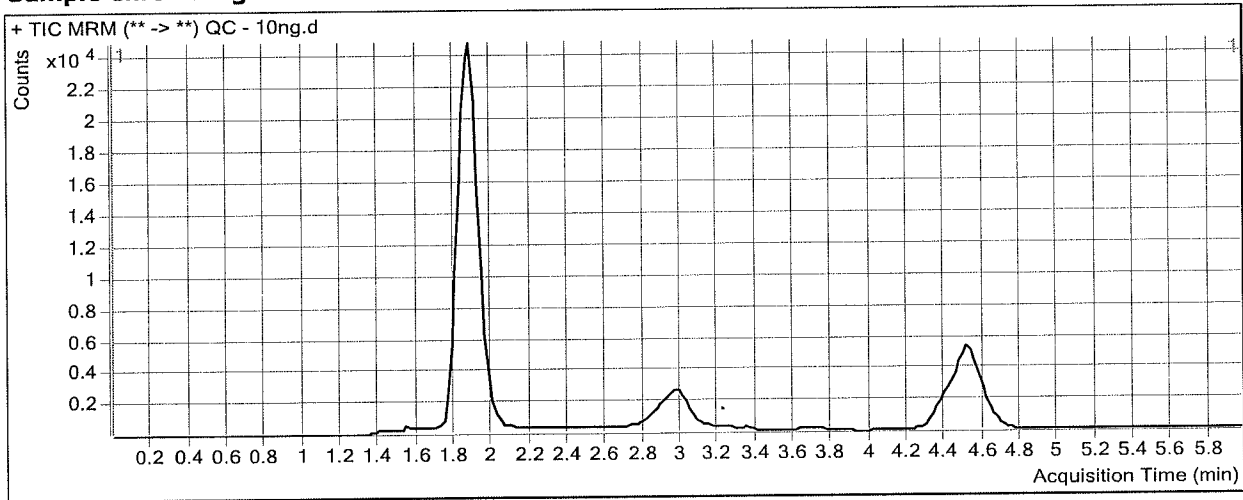
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 15:24 **Data File** QC - 10ng.d
Sample Type QC **Sample Name** QC - 10ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-H1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

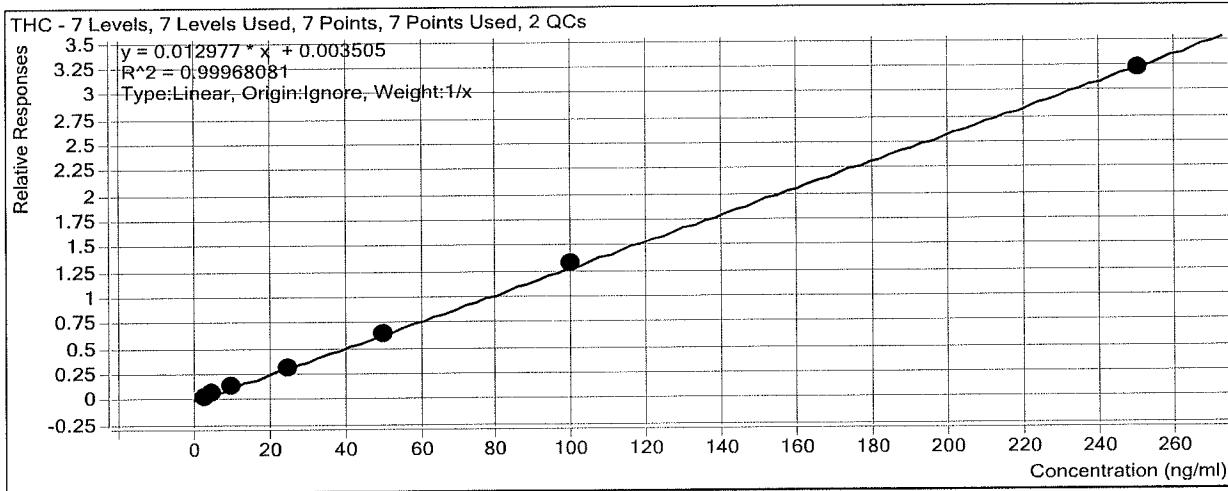
Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.895	13195	124423	0.1061	10.1982
THC-COOH	THC-COOH-d9	1.945	8659	39939	0.2168	10.5216
THC	THC-d3	4.531	7729	54478	0.1419	10.6629

ISP Forensics Calibration Curve Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin

Last Calib Update 3/23/2018 9:09 AM **Analyst Name** ISP TOX

Target Compound *THC*
Internal Standard *THC-d3*



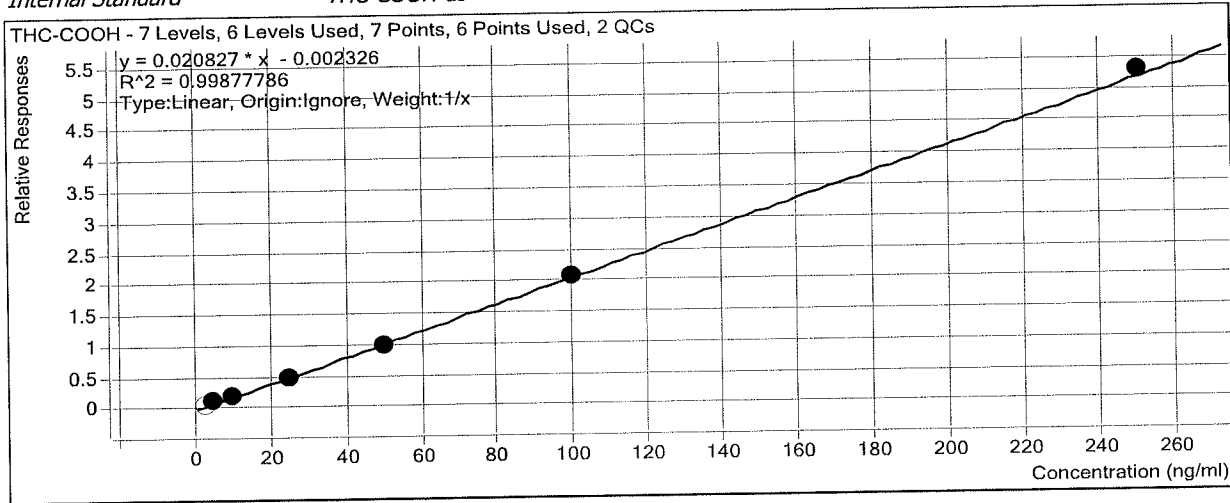
Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1 - 3ng	1	<input checked="" type="checkbox"/>	3	2.9	96.0
Cal 2 - 5ng	2	<input checked="" type="checkbox"/>	5	5.2	103.2
Cal 3 - 10ng	3	<input checked="" type="checkbox"/>	10	10.1	100.9
QC - 10ng	3	<input checked="" type="checkbox"/>	10	10.7	106.6
External Control lot 61918	3	<input checked="" type="checkbox"/>	10	6.2	61.6
Cal 4 - 25ng	4	<input checked="" type="checkbox"/>	25	24.8	99.2
Cal 5 - 50ng	5	<input checked="" type="checkbox"/>	50	49.4	98.8
Cal 6 - 100ng	6	<input checked="" type="checkbox"/>	100	102.8	102.8
Cal 7 - 250ng	7	<input checked="" type="checkbox"/>	250	247.8	99.1

ISP Forensics Calibration Curve Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin

Last Calib Update 3/23/2018 9:09 AM **Analyst Name** ISP TOX

Target Compound *THC-COOH*
Internal Standard *THC-COOH-d9*



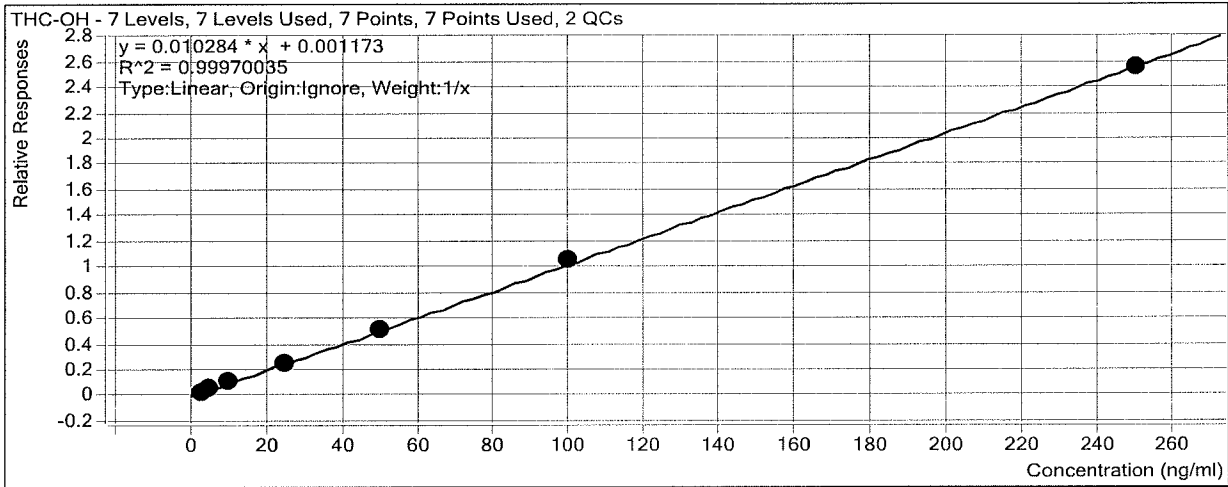
Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1 - 3ng	1	<input type="checkbox"/>	3	3.4	112.5
Cal 2 - 5ng	2	<input checked="" type="checkbox"/>	5	5.7	114.8
Cal 3 - 10ng	3	<input checked="" type="checkbox"/>	10	9.4	93.8
QC - 10ng	3	<input checked="" type="checkbox"/>	10	10.5	105.2
External Control lot 61918	3	<input checked="" type="checkbox"/>	10	8.4	84.1
Cal 4 - 25ng	4	<input checked="" type="checkbox"/>	25	24.0	95.8
Cal 5 - 50ng	5	<input checked="" type="checkbox"/>	50	47.3	94.5
Cal 6 - 100ng	6	<input checked="" type="checkbox"/>	100	99.3	99.3
Cal 7 - 250ng	7	<input checked="" type="checkbox"/>	250	254.3	101.7

ISP Forensics Calibration Curve Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin

Last Calib Update 3/23/2018 9:09 AM **Analyst Name** ISP TOX

Target Compound *THC-OH*
Internal Standard *THC-OH-d3*



Sample	Level	Enabled	Exp Conc	Final Conc	Accuracy
Cal 1 - 3ng	1	<input checked="" type="checkbox"/>	3	2.9	97.6
Cal 2 - 5ng	2	<input checked="" type="checkbox"/>	5	5.2	104.1
Cal 3 - 10ng	3	<input checked="" type="checkbox"/>	10	9.9	98.9
QC - 10ng	3	<input checked="" type="checkbox"/>	10	10.2	102.0
External Control lot 61918	3	<input checked="" type="checkbox"/>	10	7.0	70.2
Cal 4 - 25ng	4	<input checked="" type="checkbox"/>	25	24.6	98.6
Cal 5 - 50ng	5	<input checked="" type="checkbox"/>	50	49.4	98.8
Cal 6 - 100ng	6	<input checked="" type="checkbox"/>	100	102.7	102.7
Cal 7 - 250ng	7	<input checked="" type="checkbox"/>	250	248.2	99.3

ISP FORENSICS - Cd'A Instrument # 62340

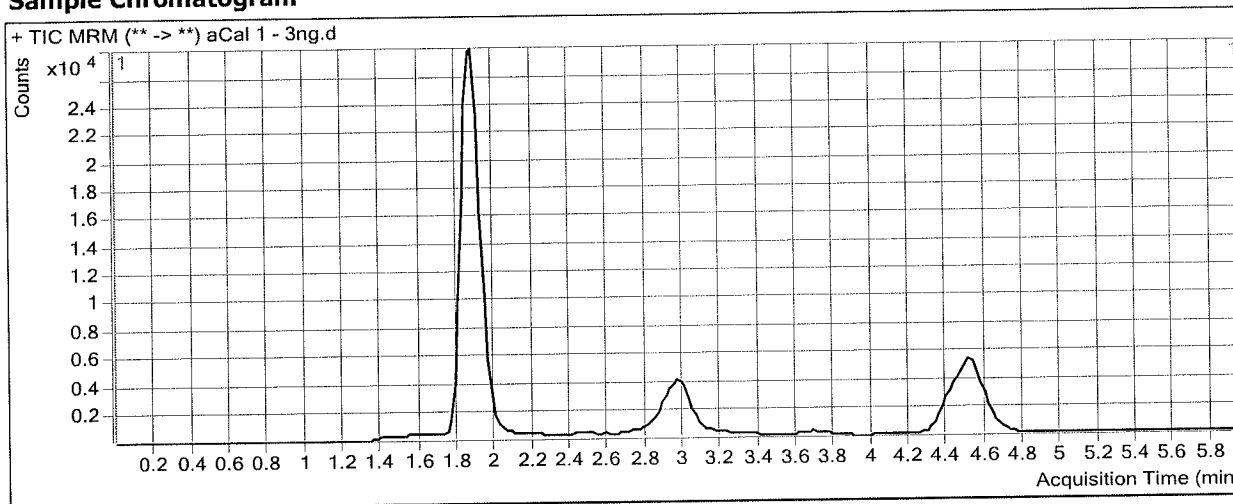
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 13:38 **Data File** aCal 1 - 3ng.d
Sample Type Calibration **Sample Name** Cal 1 - 3ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-A1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.875	4605	147187	0.0313	2.9279
THC-COOH	THC-COOH-d9	1.945	3251	47824	0.0680	3.3756
THC	THC-d3	4.531	2624	64190	0.0409	2.8794

ISP FORENSICS - Cd'A Instrument # 62340

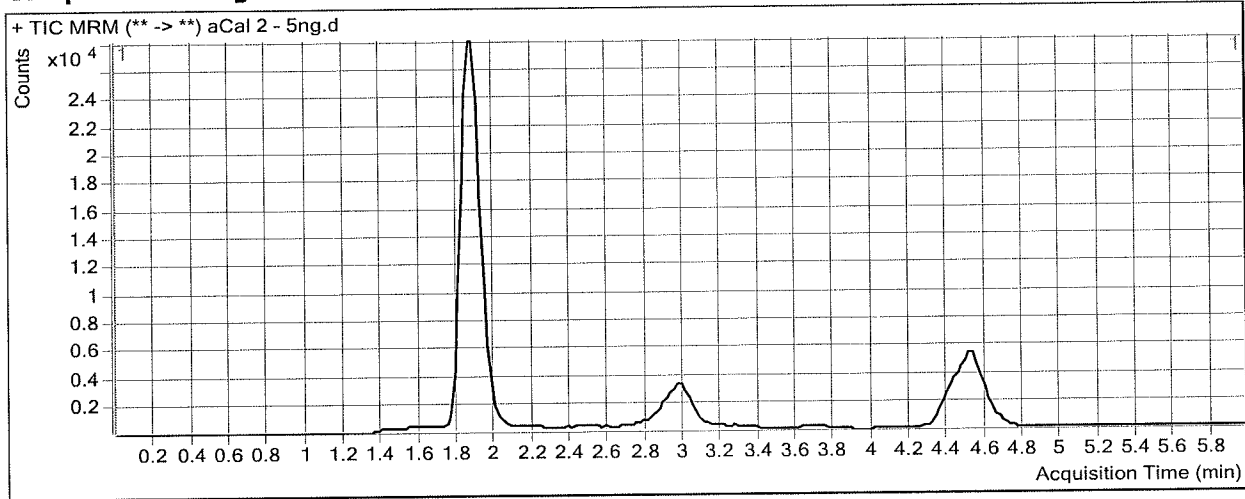
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 13:49 **Data File** aCal 2 - 5ng.d
Sample Type Calibration **Sample Name** Cal 2 - 5ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-B1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.875	7920	144788	0.0547	5.2051
THC-COOH	THC-COOH-d9	1.945	5486	46813	0.1172	5.7386
THC	THC-d3	4.511	4358	61863	0.0704	5.1579

ISP FORENSICS - Cd'A Instrument # 62340

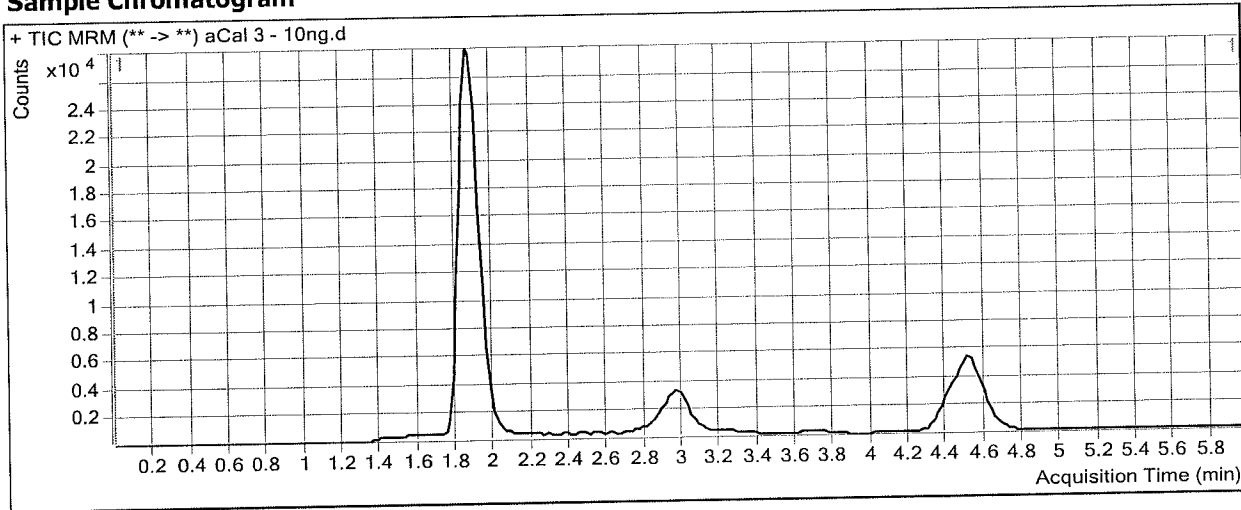
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 14:01 **Data File** aCal 3 - 10ng.d
Sample Type Calibration **Sample Name** Cal 3 - 10ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-C1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.875	14072	136770	0.1029	9.8902
THC-COOH	THC-COOH-d3	1.945	8545	44259	0.1931	9.3819
THC	THC-d3	4.531	7686	57167	0.1344	10.0897

ISP FORENSICS - Cd'A Instrument # 62340

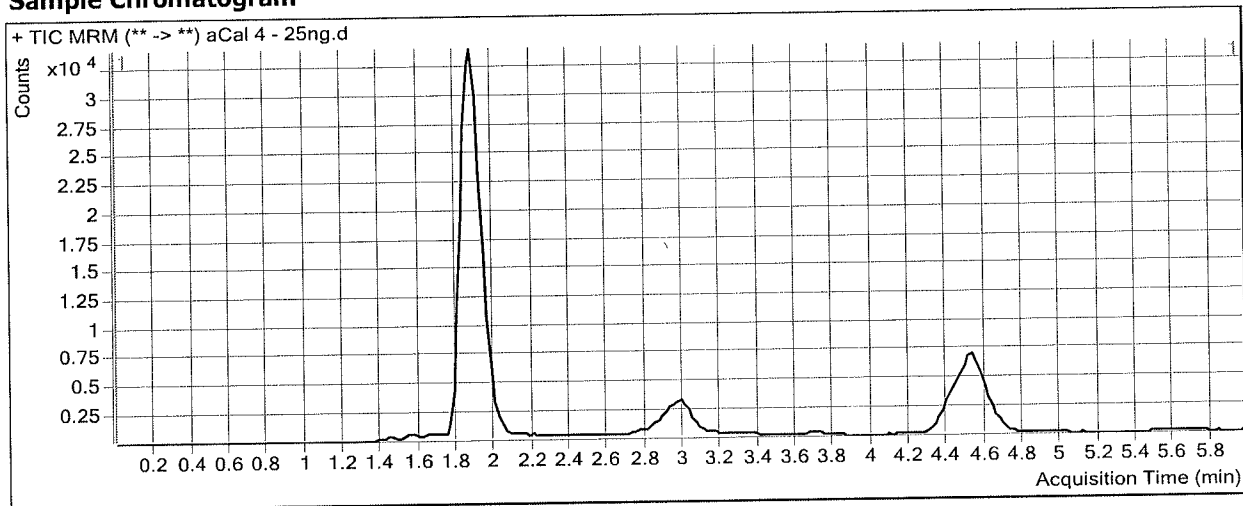
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 14:13 **Data File** aCal 4 - 25ng.d
Sample Type Calibration **Sample Name** Cal 4 - 25ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-D1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.875	36156	141998	0.2546	24.6445
THC-COOH	THC-COOH-d9	1.945	22676	45661	0.4966	23.9564
THC	THC-d3	4.531	19526	60015	0.3254	24.8018

ISP FORENSICS - Cd'A Instrument # 62340

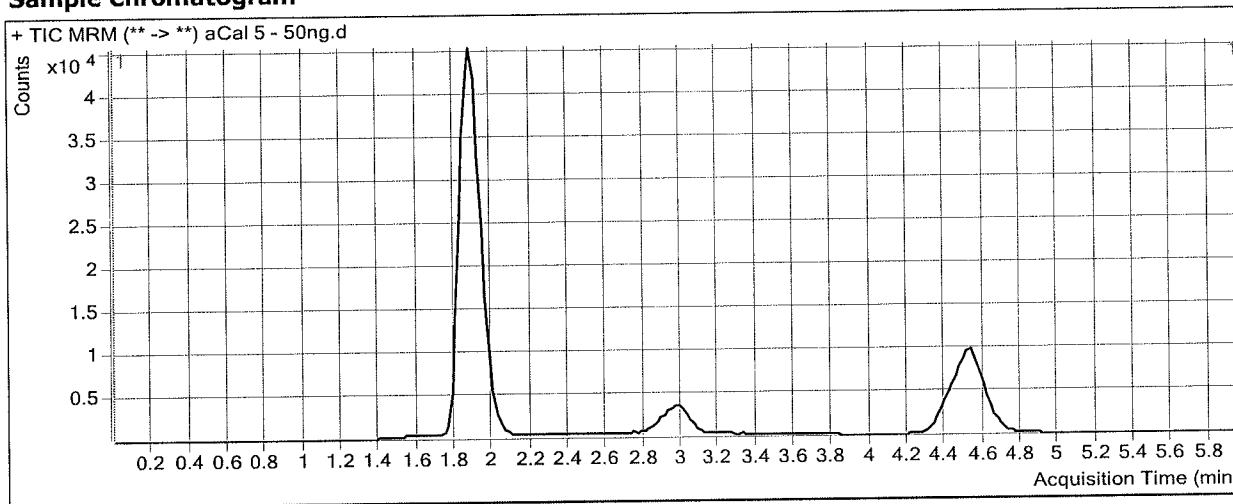
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 14:25 **Data File** aCal 5 - 50ng.d
Sample Type Calibration **Sample Name** Cal 5 - 50ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-E1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.895	78768	154682	0.5092	49.4021
THC-COOH	THC-COOH-d9	1.945	47462	48331	0.9820	47.2617
THC	THC-d3	4.531	41658	64643	0.6444	49.3892

ISP FORENSICS - Cd'A Instrument # 62340

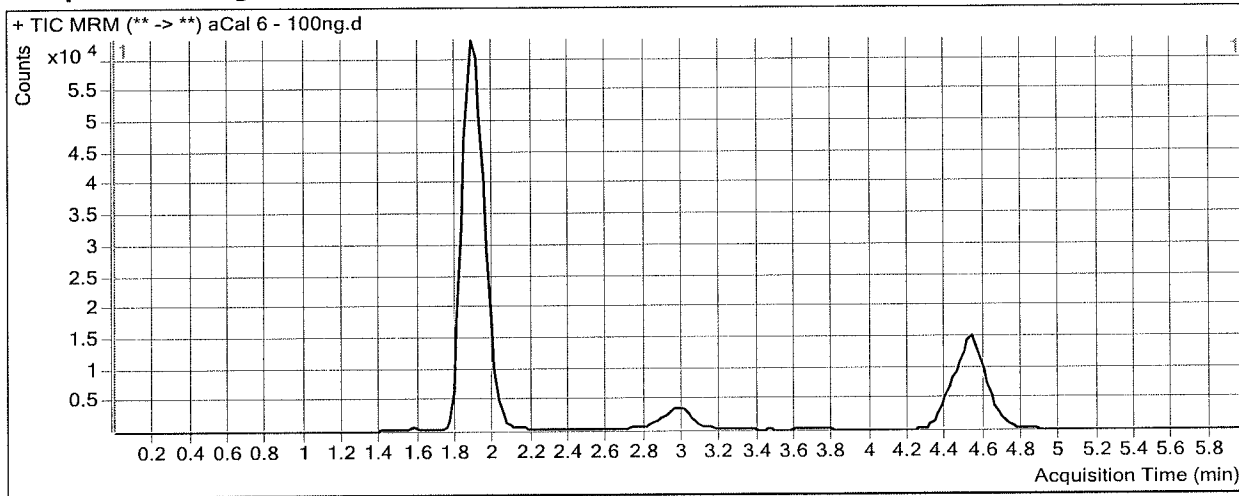
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 14:37 **Data File** aCal 6 - 100ng.d
Sample Type Calibration **Sample Name** Cal 6 - 100ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-F1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.875	162308	153438	1.0578	102.7441
THC-COOH	THC-COOH-d9	1.945	98473	47655	2.0664	99.3252
THC	THC-d3	4.531	87032	65040	1.3381	102.8450

ISP FORENSICS - Cd'A Instrument # 62340

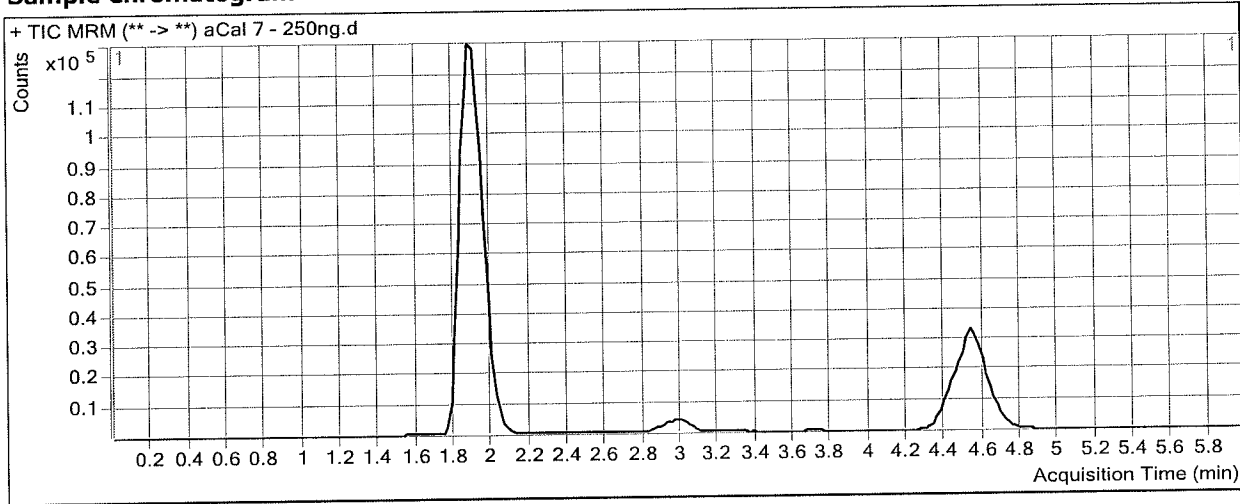
Cannabinoids Analysis Report

Batch Data Path D:\2018 Data\03222018 cann quant\QuantResults\32218 cann quant.batch.bin
Analysis Time 3/23/2018 9:09 AM **Analyst Name** ISP Tox
Report Time 3/23/2018 9:11 AM **Reporter Name** ISP Tox
Last Calib Update 3/23/2018 9:09 AM **Batch State** Processed

Analysis Info

Acq Time 2018-03-22 14:49 **Data File** aCal 7 - 250ng.d
Sample Type Calibration **Sample Name** Cal 7 - 250ng
Dilution 1 **Acq Method** AM 27 Quant THC 7-2017.m
Position P1-G1 **Sample Info**
Inj Vol -1 **Comment** AM 27 Cannabinoid Confirmation

Sample Chromatogram



Results

Compound	ISTD Compound	RT	Response	ISTD Resp	Resp Ratio	Final Conc
THC-OH	THC-OH-d3	1.895	461014	180539	2.5535	248.1862
THC-COOH	THC-COOH-d9	1.945	265574	50157	5.2948	254.3362
THC	THC-d3	4.531	244678	75994	3.2197	247.8370