

Validation Review

Procedure GC/MS Semi-quantitative procedure for
plant materials (THC Concentration Screen)

Check the appropriate box: New Validation ☐ Modification ☒ Performance Check ☐

Sign and Date to indicate your acceptance of the procedure/instrument:

Examiner (if applicable) Brett Trotter Date 8/28/19

Unit Supervisor John B. Everett Date 8-28-19

Technical Leader (if different than Supervisor) John B. Everett Date 8-28-19

Crime Laboratory Regional Supervisor Jennifer Ball Date 8-28-19

Quality Assurance Manager Al DOE Date 08-28-19

*All information must be submitted to the Quality Assurance Manager prior to the implementation of the procedure/instrument. If all technical staff training has not been completed, please include a proposed training plan and completion schedule.



BILL LEE
Governor

TENNESSEE BUREAU OF INVESTIGATION

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DAVID B. RAUSCH
Director

MEMORANDUM

TO: Chad Johnson, Quality Assurance Manager
Glenn Everett, Forensic Chemistry Technical Leader / Nashville Supervisor

FROM: Brett Trotter, Special Agent Forensic Scientist II

DATE: August 13th, 2019

SUBJECT: Validation Plan for a Gas Chromatograph Mass Spectroscopy Screening method of Δ^9 -Tetrahydrocannabinol in plant material samples.

Our laboratory is developing a screening method using gas chromatograph mass spectroscopy to distinguish marijuana from hemp in submitted plant material samples. While a full quantitative method is available for these purposes, it is our goal to screen samples which are above the highest calibration level quickly and efficiently. This screening method will be based off our current quantitative method using the same extraction, instrument method, internal standards, and sample amounts. The difference will be the elimination of four calibration standards, the negative control sample, and the positive control sample.

Validation experiments will include the following:

- Repeatability
- Marijuana Study
- Hemp Study

A. Repeatability: This experiment will involve preparing a THC standard of known concentration and run multiple times to understand instrument variation.

B. Marijuana Study: Here we will extract ten marijuana samples using the current quantitation methodology and compare the results to the THC standard to understand how to collect and interpret data from this screening method. We need to ascertain how the ratio of THC to internal standard compares from plant material samples to laboratory prepared standards.

C. Hemp Study: In this experiment ten known hemp samples from the Department of Agriculture will be extracted using the procedure outlined in the current quantitation method. This study will be conducted so we can understand what THC to internal standard ratio will be obtained from hemp samples.



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References:

“Hemp Sample Preparation”, Biochemistry Laboratory SOP No.: PT-LBOP-014, Colorado Department of Agriculture, Sept. 5, 2014.

“Dedicated Cannabinoid Potency Testing Using the Agilent 1220 Infinity II LC System”, Michael Zumwalt and Anthony Macherone, Agilent Technologies, Application Note – Food Testing, August 16, 2018.

“Validation of a Cannabinoid Quantitation Method Using an Agilent 6430 LC/MS/MS”, Jason Hudson Ph. D., James Hutchings Ph. D., Rebecca Wagner Ph. D., Virginia Department of Forensic Science, Curt Harper Ph. D., Pat Friel, Agilent Technologies, June 20, 2013.

“Cannabinoid Procedure (VIA LC/MS/MS)”, Tennessee Bureau of Investigation, Toxicology Quality Assurance and Procedures Manual 8.9, March 9, 2018.

“Quantitation of Cannabinol and Tetrahydrocannabinol by GC”, Redacted Procedure.

“Marihuana”, Washington State Patrol Crime Laboratory Division, Chemical Analysis Technical Procedures chapter 13, May 23, 2013.

E-mail forum discussion from the Clandestine Laboratory Investigating Chemist specifically from Jason Nawyn from the US Army Criminal Investigation Laboratory and Lieutenant Angil Landrum from South Carolina Law Enforcement Division.



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**Modification of Δ^9 -Tetrahydrocannabinol Quantitation of
Plant Material by
Gas Chromatography/Mass Spectroscopy**

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I. Purpose:

Most marijuana samples submitted to our laboratory are likely to have Δ^9 – Tetrahydrocannabinol (THC) concentrations greater than 1 % by dry weight. Running a full quantitation on these samples is time consuming and would lead to a report stating the THC concentration was greater than 1%. In some cases preparing the sample and comparing the results to the highest calibration standard might save time. If a sample contained THC in such a concentration that was above the highest calibrator, it would show the sample was marijuana (in conjunction with microscopic examination and chemical color testing) without running a full calibration curve with control samples.

This GC/MS screening method would save the analyst time by not having to prepare and run four other calibrations standards and two controls. In instrument time alone, this would reduce the run time from 96 minutes to 24 minutes not to mention the time saved in preparation of the standards. However, if the results of the unknown are below the 1% standard then a full quantitation might have to be completed and this would cost the analysts time. Therefore, if the GC/MS screening method is implemented and most of the samples are falling below the 1% standard, then our laboratory should reconsider the use of this method and use the full quantitation method exclusively.

GC/MS screening method uses elements from the full quantitation method, because the quantitation method has been validated and is known to work for our purposes. The same internal standard will be used, unknown plant material samples will be prepared in the same manner, and the 500 $\mu\text{g/mL}$ THC standard from the full quantitation method will be used in the screening method.

Since a calibration curve will not be generated in this method, results will not be quantitative. The analyst will only be able to say their sample has a THC concentration greater than or less than 1% THC. The legally significant amount of THC is 0.3%. Therefore, we will have a large amount of confidence that samples exceeding this 1% standard will be illegal and able to be identified as marijuana.

II. Repeatability:

On 8-12-19 I prepared a 500 µg/mL Δ^9 – Tetrahydrocannabinol (THC) standard using the 1 mg/mL Cerilliant standard (Lot # FE08221804). This standard also contained an internal standard of tribenzylamine in a 150 µg/mL concentration. A repeatability study was completed by doing multiple injections of this standard. The chart below outlines the results obtained.

THC Abundance	Tribenzylamine	Ratio
39835250	12043984	3.307
22698716	7270181	3.122
30505831	10824859	2.818
25745356	10442462	2.465
31614829	9674587	3.268
38236145	10420749	3.669
32967430	10479643	3.146
29616555	10462257	2.831
33796276	11007658	3.070
34970567	11309174	3.092
39263786	11288885	3.478
41760376	11367672	3.674
36923530	12169433	3.034
25354446	742053	3.417
29578063	10867145	2.722
33234968	11565496	2.874
30099211	11329027	2.657
30929275	10851887	2.850
32362842	11638857	2.781
30552539	10580291	2.888

The ratio for each injection was calculated by dividing the abundance of THC ions by the abundance of tribenzylamine ions. Using the ratio of THC to internal standard corrects for many variations which might occur within the instrument or to the sample before injection, such as injection volume, gas flow variations, oven temperature fluctuations, evaporation, ect. The average THC : Tribenzylamine ratio is 3.058 with a standard deviation of 0.332.

Ten marijuana samples were extracted using the same procedure as outlined in the quantitation procedure. These samples were run on the GC/MS using the THC-MS method which is the same method used in the quantitation. The ten samples were bracketed by a 1% THC standard prepared in a 500 µg/mL concentration. The THC standard is the same as the highest calibration standard used in the full quantitation method. The marijuana used in this study was approximately three years old. The mass spectral data revealed that cannabinol (CBN) was the most prevalent cannabinoid. CBN is breakdown product of THC and therefore, these results are consistent with aged marijuana. Four of the marijuana samples compared to the first

THC standard were below the 1% mark and two of those four samples were below the 1% mark when compared to the second standard. I believe these results indicating low THC concentrations in these samples are due to the breakdown of THC into CBD.

Sample	4 – AP Result	Ratio THC	Result A	Result B
A THC 500 µg/mL	N/A	3.392	N/A	N/A
Marijuana 1	Blue	9.832	Positive	Positive
Marijuana 2	Blue	1.199	Negative	Negative
Marijuana 3	Blue	2.801	Negative	Positive
Marijuana 4	Blue	4.284	Positive	Positive
Marijuana 5	Blue	8.434	Positive	Positive
Marijuana 6	Blue	14.697	Positive	Positive
Marijuana 7	Blue	2.603	Negative	Positive
Marijuana 8	Blue	3.434	Positive	Positive
Marijuana 9	Blue	5.417	Positive	Positive
Marijuana 10	Blue	1.074	Negative	Negative
B THC 500 µg/mL	N/A	2.413	N/A	N/A

Ten hemp samples from the Department of Agriculture were prepared in the same manner as the marijuana samples described above. The hemp samples were bracketed by a 1 % (500 µg/mL) THC standard. All of the hemp samples when compared to both the first and last THC standard gave ratio well below the 1 % level. There were not any false positive results for the hemp samples. These results indicate that the screening GC/MS method is capable of identifying plant material samples that are hemp in conjunction with chemical color testing and microscopic examination. The added benefit of obtaining mass spectral data allows the analyst to identify with certainty the cannabinoids present in the sample.

Sample	4 – AP Result	Ratio	Result A	Result B
A THC 500 µg/mL	N/A	3.018	N/A	N/A
Hemp 1	Pink	0.216	Negative	Negative
Hemp 2	Pink	0.349	Negative	Negative
Hemp 3	Pink	0.099	Negative	Negative
Hemp 4	Pink	0.159	Negative	Negative
Hemp 5	Pink	0.188	Negative	Negative
Hemp 6	Pink	0.481	Negative	Negative
Hemp 7	Pink	0.503	Negative	Negative
Hemp 8	Pink	0.228	Negative	Negative
Hemp 9	Pink	0.468	Negative	Negative
Hemp 10	Pink	0.364	Negative	Negative
B THC 500 µg/mL	N/A	2.137	N/A	N/A

To further investigate the screening GC/MS method fifteen samples were prepared using parsley and THC standards. Five negative samples, five 0.5% THC (250 µg/mL) samples, and five 1.5% THC (750 µg/mL) were prepared by pipetting THC standard onto parsley. These samples were extracted using the methodology outlined in the full THC quantitation procedure. When comparing the ratios of THC to tribenzylamine (internal standard), the method distinguished the 0.5% and 1.5% samples. The average ratio for the 0.5% samples was 1.222 and the average for the 1.5% samples was 3.928. These results indicate that the screening method will be beneficial in identifying and eliminating the need for full quantitation on plant material samples where the THC concentration is greater than 1%.

Sample	Ratio	Result
THC 500 µg/mL	2.075	N/A
Negative 1	No THC peak	N/A
Negative 2	No THC peak	N/A
Negative 3	No THC peak	N/A
Negative 4	No THC peak	N/A
Negative 5	No THC peak	N/A
250 µg/mL 1	1.213	Less than 1 %
250 µg/mL 2	1.218	Less than 1 %
250 µg/mL 3	1.227	Less than 1 %
250 µg/mL 4	1.211	Less than 1 %
250 µg/mL 5	1.239	Less than 1 %
750 µg/mL 1	4.085	Greater than 1 %
750 µg/mL 2	4.299	Greater than 1 %
750 µg/mL 3	4.479	Greater than 1 %
750 µg/mL 4	3.899	Greater than 1 %
750 µg/mL 5	2.876	Greater than 1 %

III Conclusions:

The addition of a screening method will reduce the number of plant material samples that must be fully quantitated. The method will give the analyst confidence that a plant material sample is marijuana and is above the highest point on our calibration curve. The screening method is significantly faster than the quantitative method allowing the laboratory to process more evidence than would be possible if full quantitation was required. When plant material samples fall below the 1% standard, we could still estimate the approximate THC concentration allowing us to recommend to district attorneys whether or not criminal charges should be pursued. For example, if no THC was detected in the GC/MS screening test then it would be extremely unlikely that any THC would be detected in the full quantitation of that sample.

The GC/MS screening method unlike the chemical color test also gives the analyst conclusive data as to which cannabinoids are present and approximately in what abundance. This information would be very useful when testifying on these exhibits.

IV. Training and Competency Testing:

The training required to perform the Δ^9 -tetrahydrocannabinol GC/MS screening will be covered in the training for the full quantitation method. When an analyst passes the competency test for the full quantitation method, they will be considered competent at performing this screening modification. The principles and techniques to perform the modification are the same ones used to conduct the full quantitation and use the same reagents prepared in the same way.

An analyst may be trained by an individual who is competent in the full quantitative method to perform the GC/MS screening method. This training will cover how to prepare the tribenzylamine internal standard, the 1% Δ^9 -tetrahydrocannabinol standard, and how to extract the plant material sample. Once trained, the analyst will pass a competency test which will be documented in this validation study before performing the screening GC/MS technique in case work.

VI. References:

“Hemp Sample Preparation”, Biochemistry Laboratory SOP No.: PT-LBOP-014, Colorado Department of Agriculture, Sept. 5, 2014.

“Dedicated Cannabinoid Potency Testing Using the Agilent 1220 Infinity II LC System”, Michael Zumwalt and Anthony Macherone, Agilent Technologies, Application Note – Food Testing, August 16, 2018.

“Validation of a Cannabinoid Quantitation Method Using an Agilent 6430 LC/MS/MS”, Jason Hudson Ph. D., James Hutchings Ph. D., Rebecca Wagner Ph. D., Virginia Department of Forensic Science, Curt Harper Ph. D., Pat Friel, Agilent Technologies, June 20, 2013.

“Cannabinoid Procedure (VIA LC/MS/MS)”, Tennessee Bureau of Investigation, Toxicology Quality Assurance and Procedures Manual 8.9, March 9, 2018.

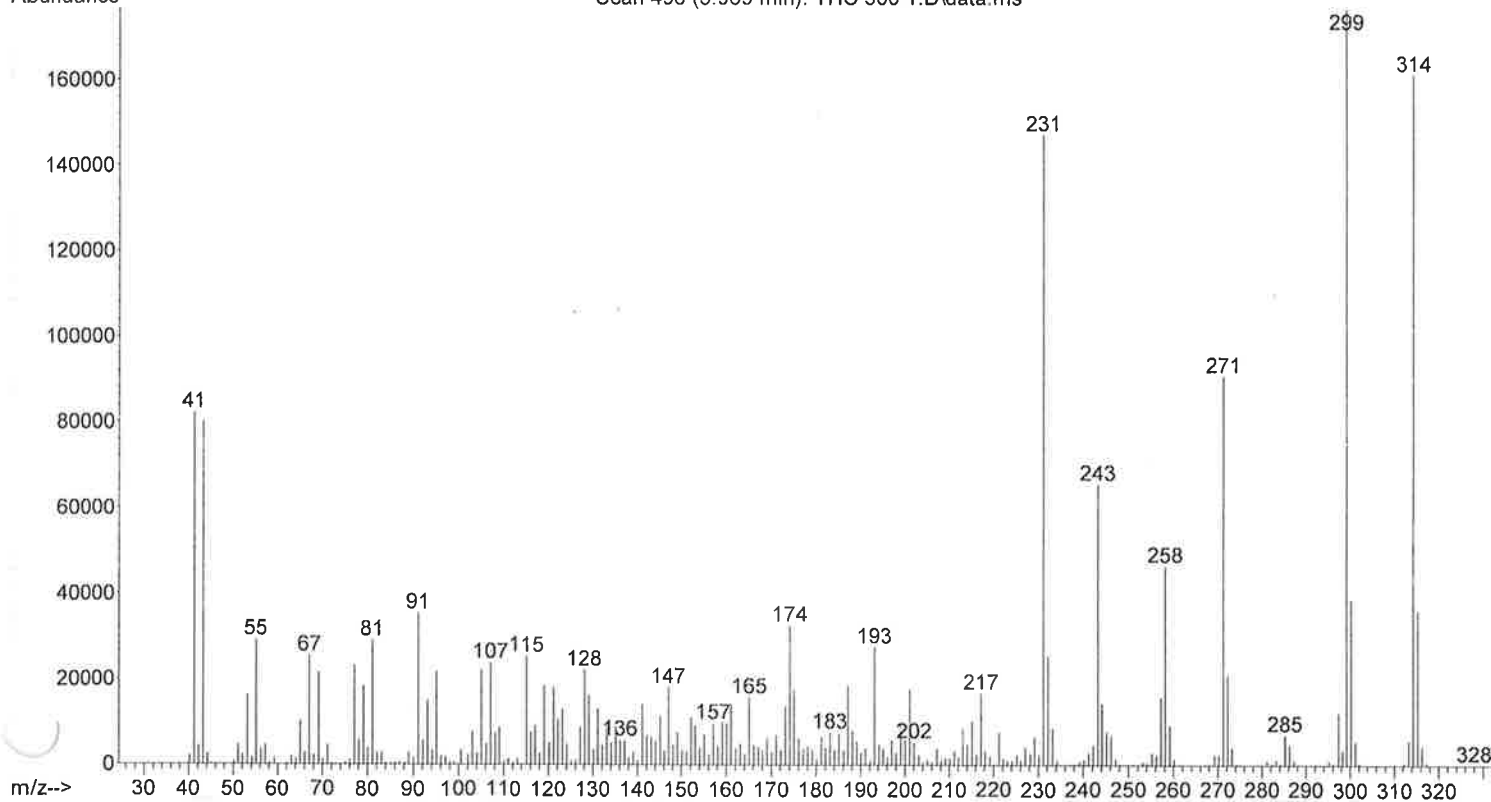
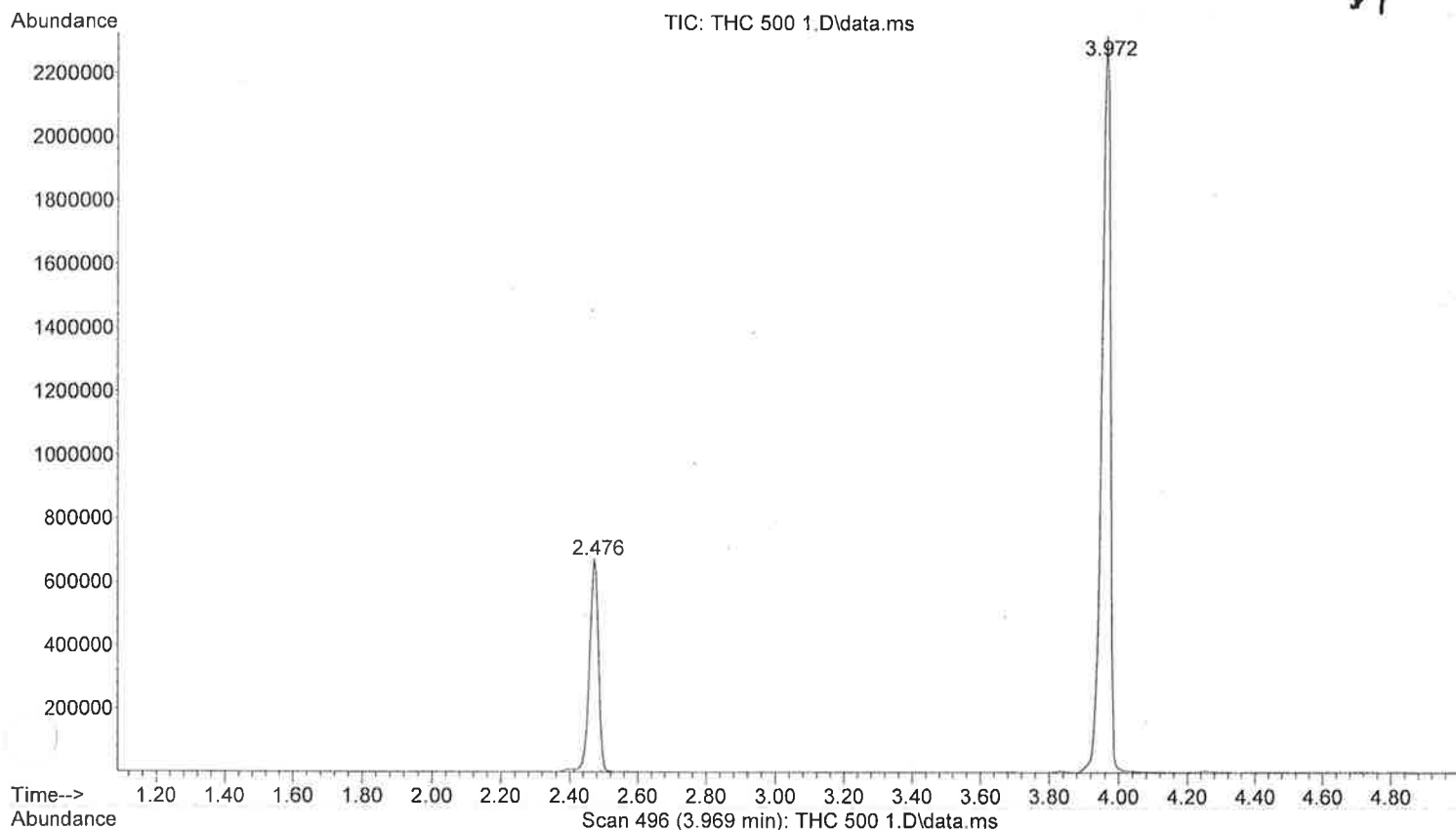
“Quantitation of Cannabinol and Tetrahydrocannabinol by GC”, Redacted Procedure.

“Marihuana”, Washington State Patrol Crime Laboratory Division, Chemical Analysis Technical Procedures chapter 13, May 23, 2013.

E-mail forum discussion from the Clandestine Laboratory Investigating Chemist specifically from Jason Nawyn from the US Army Criminal Investigation Laboratory and Lieutenant Angil Landrum from South Carolina Law Enforcement Division.

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Misc Info : Methanol
Vial Number: 27

8/13/19
BT



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8/13/19
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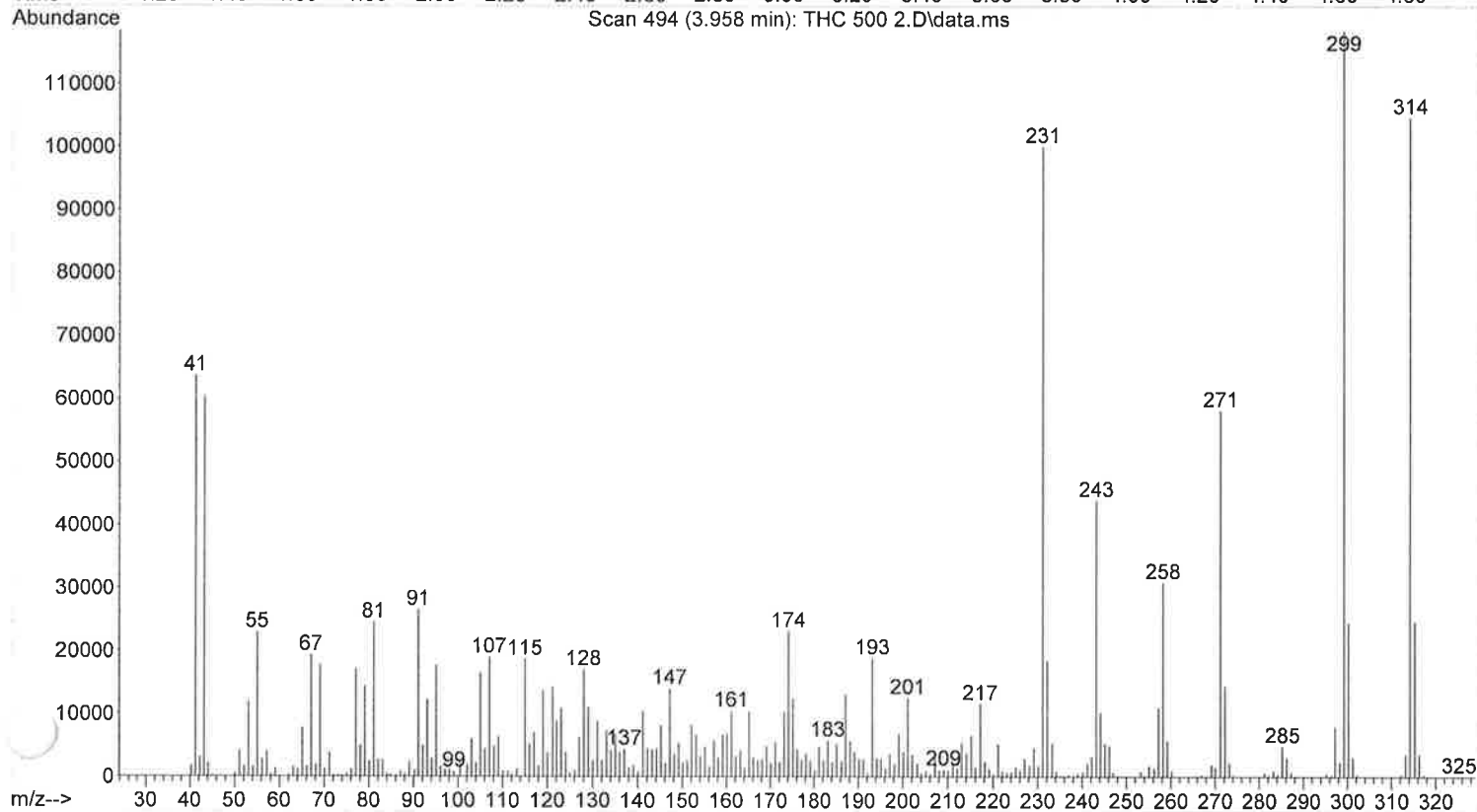
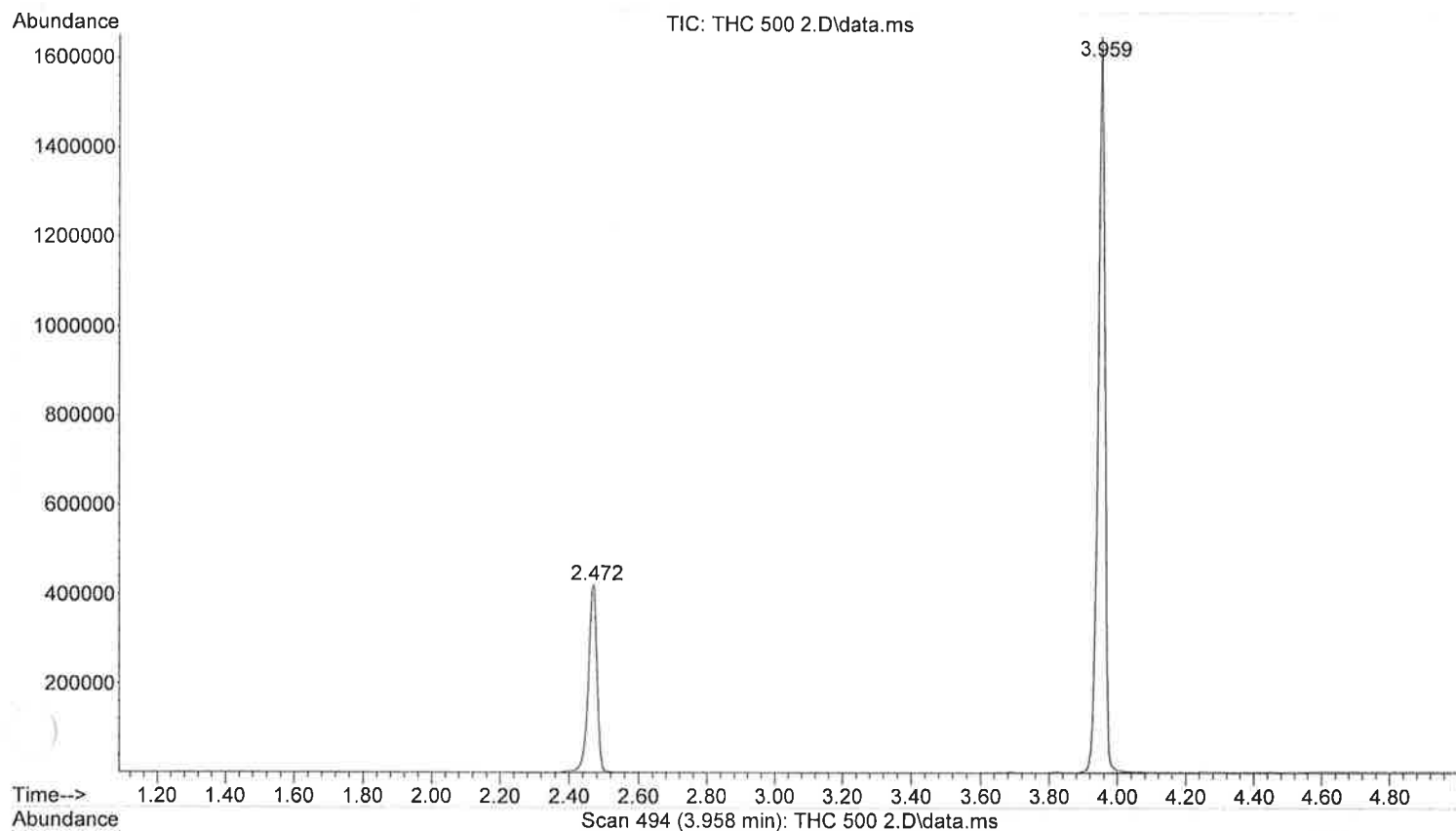
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8/13/19
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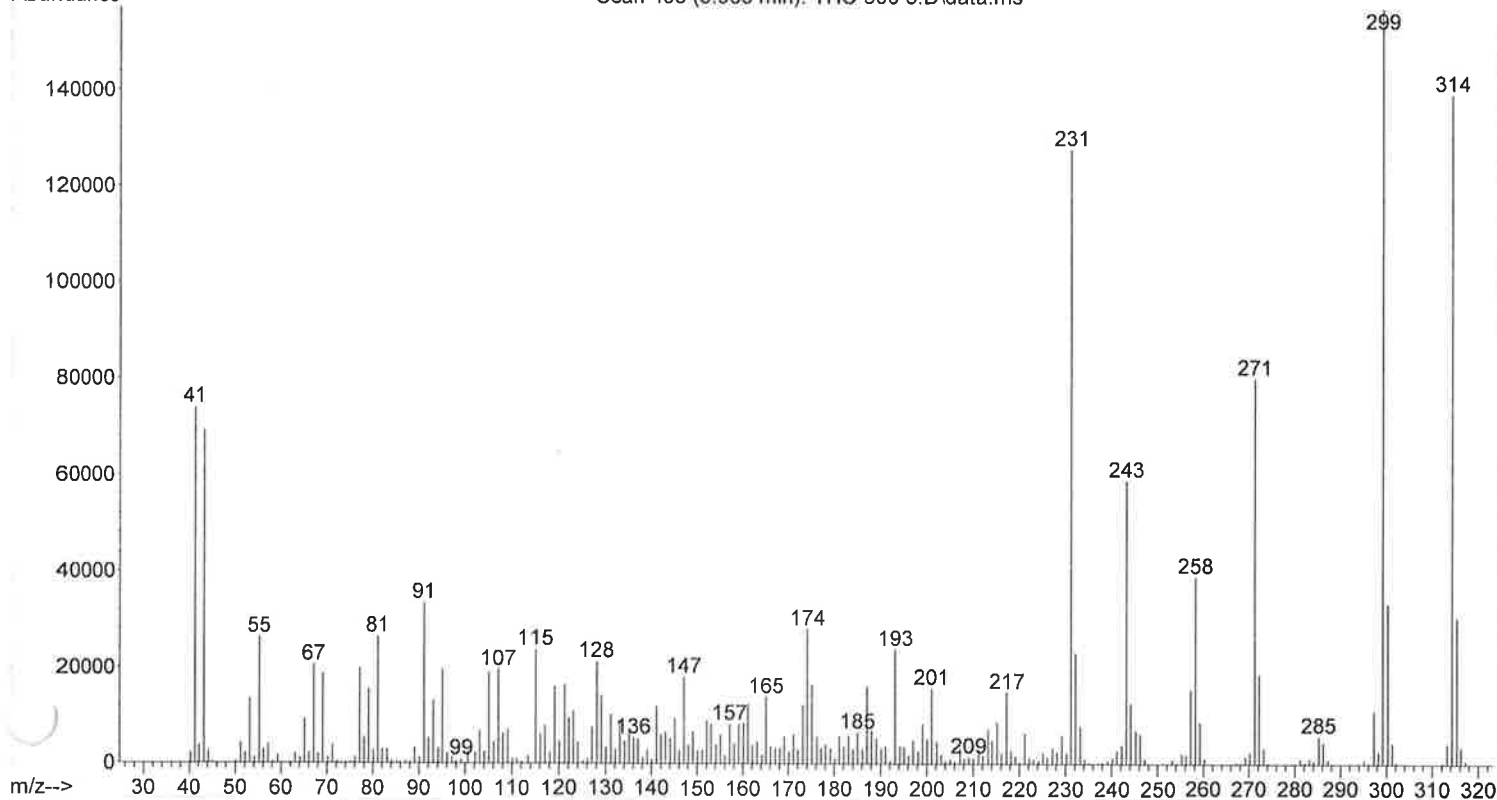
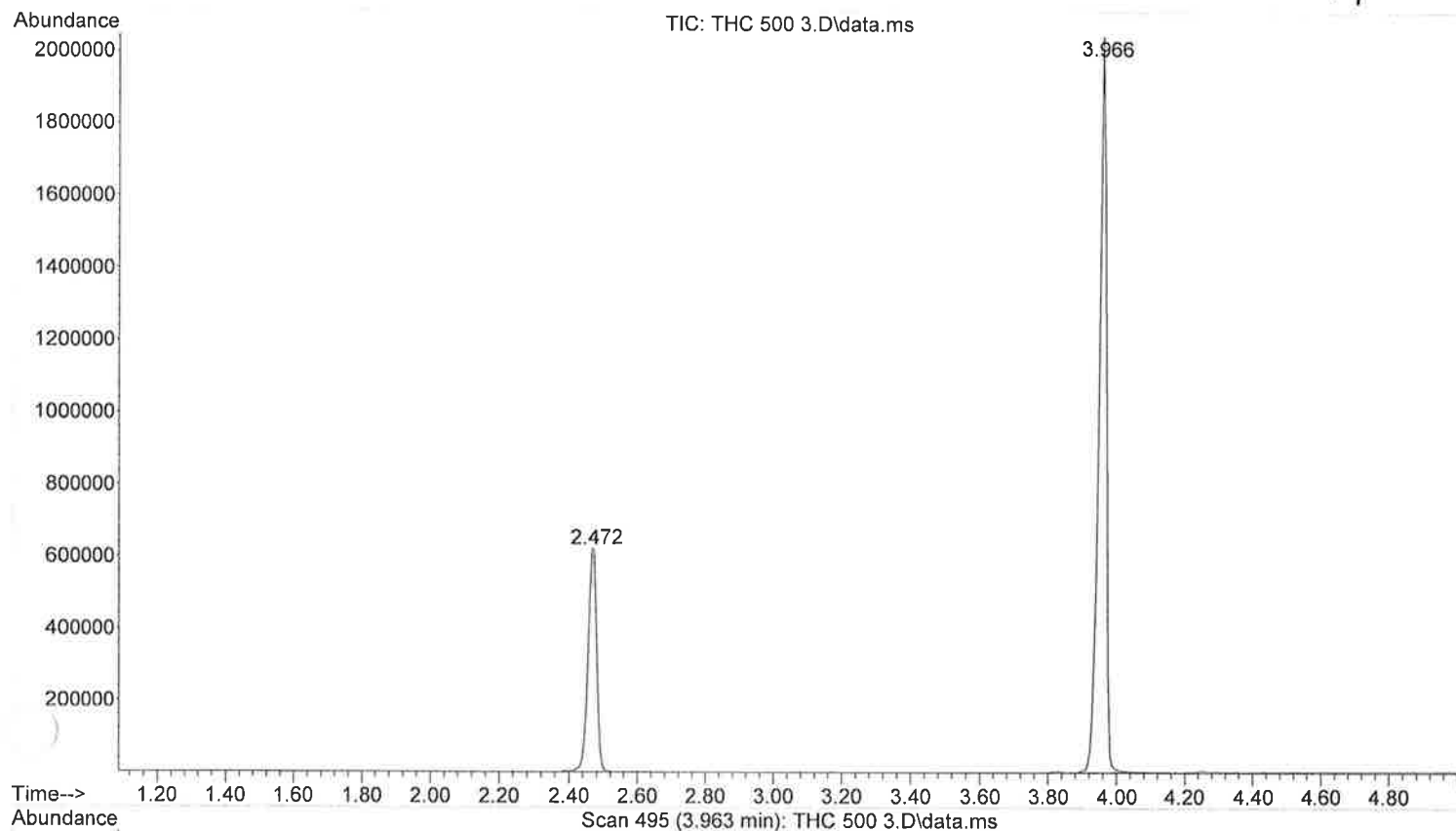
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8/13/19
BT



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8/13/19
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Integration Parameters: autoint1.e
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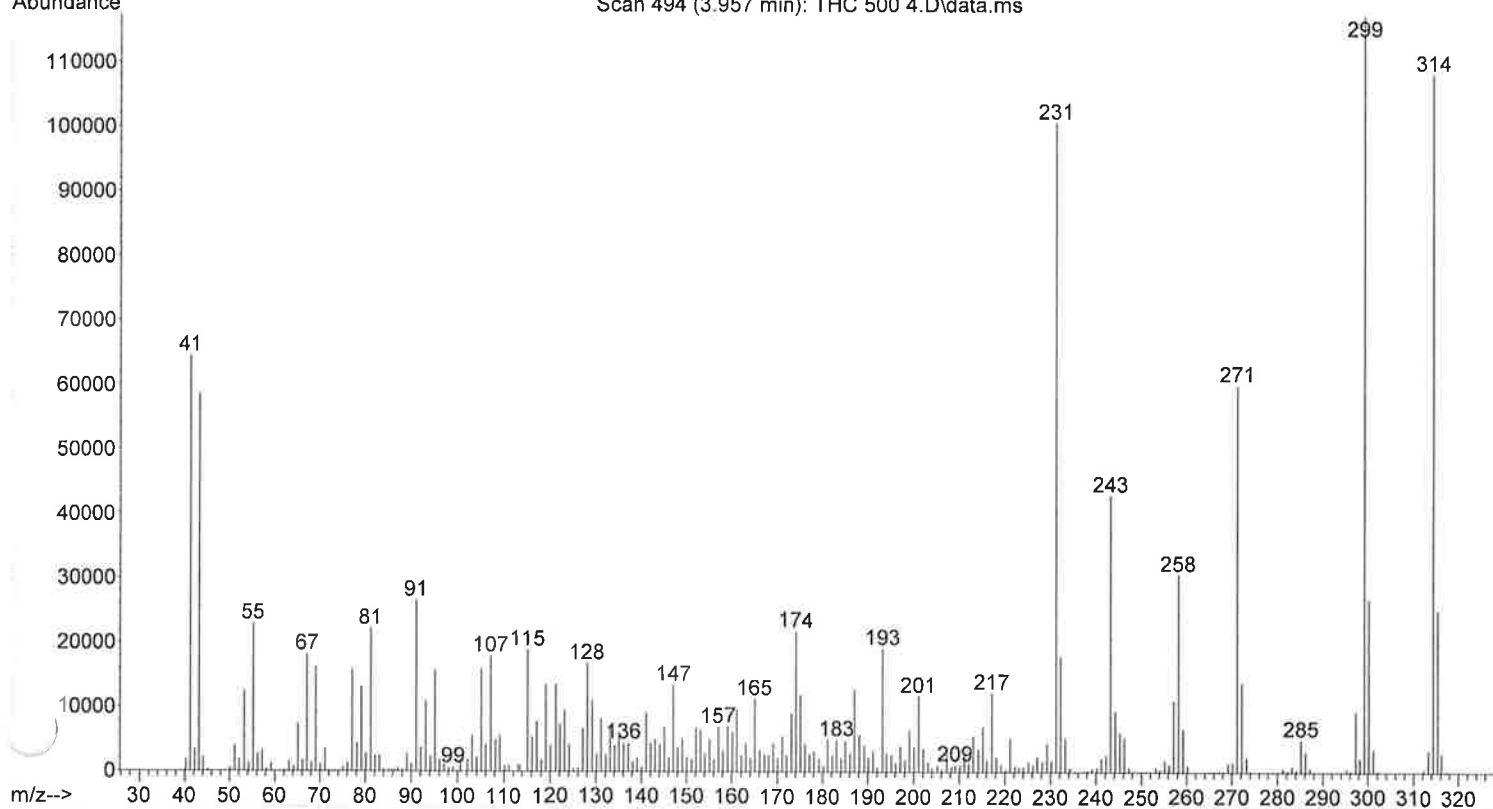
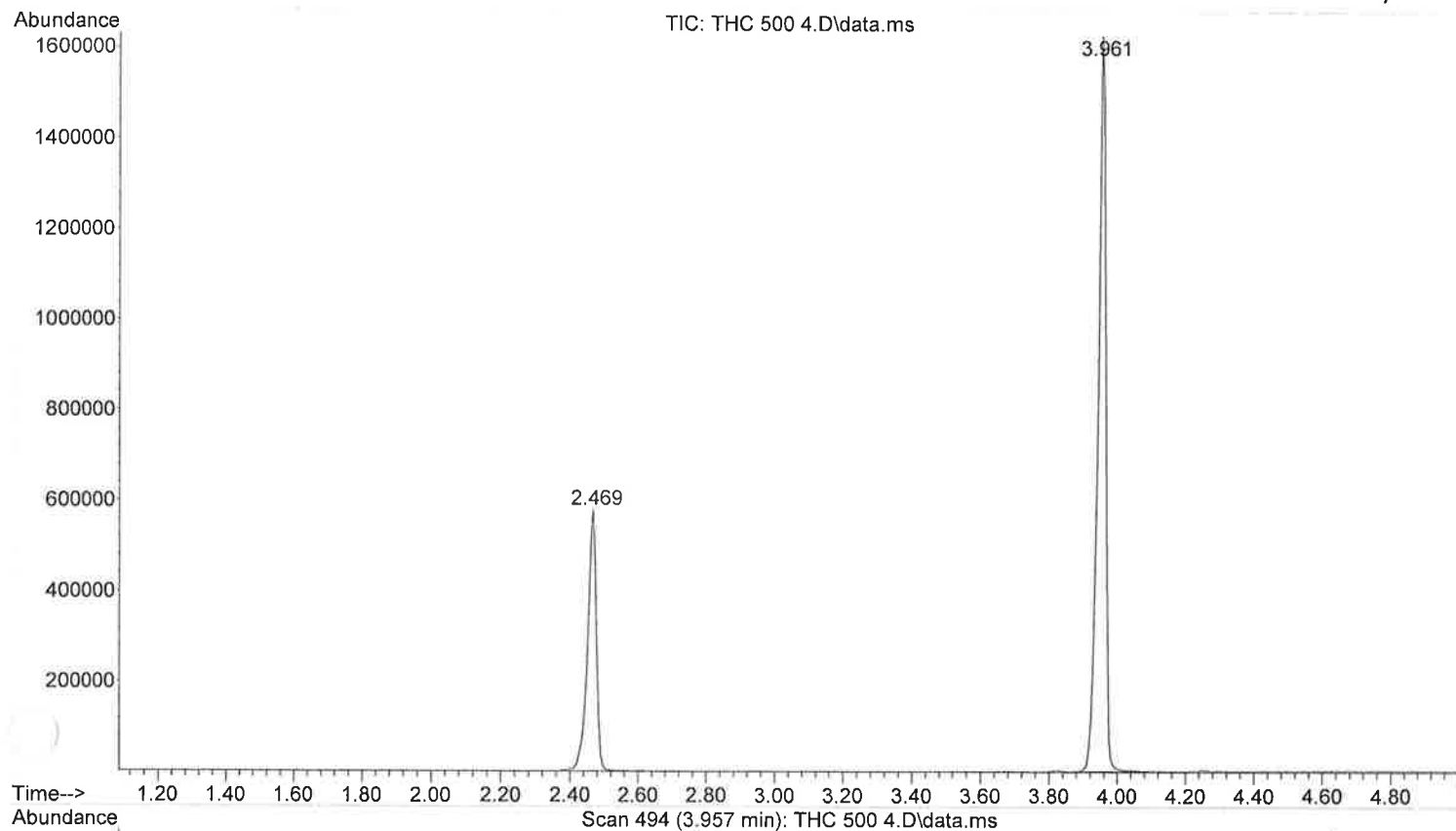
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8/13/19
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c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/14
BT

Integration Parameters: autoint1.e
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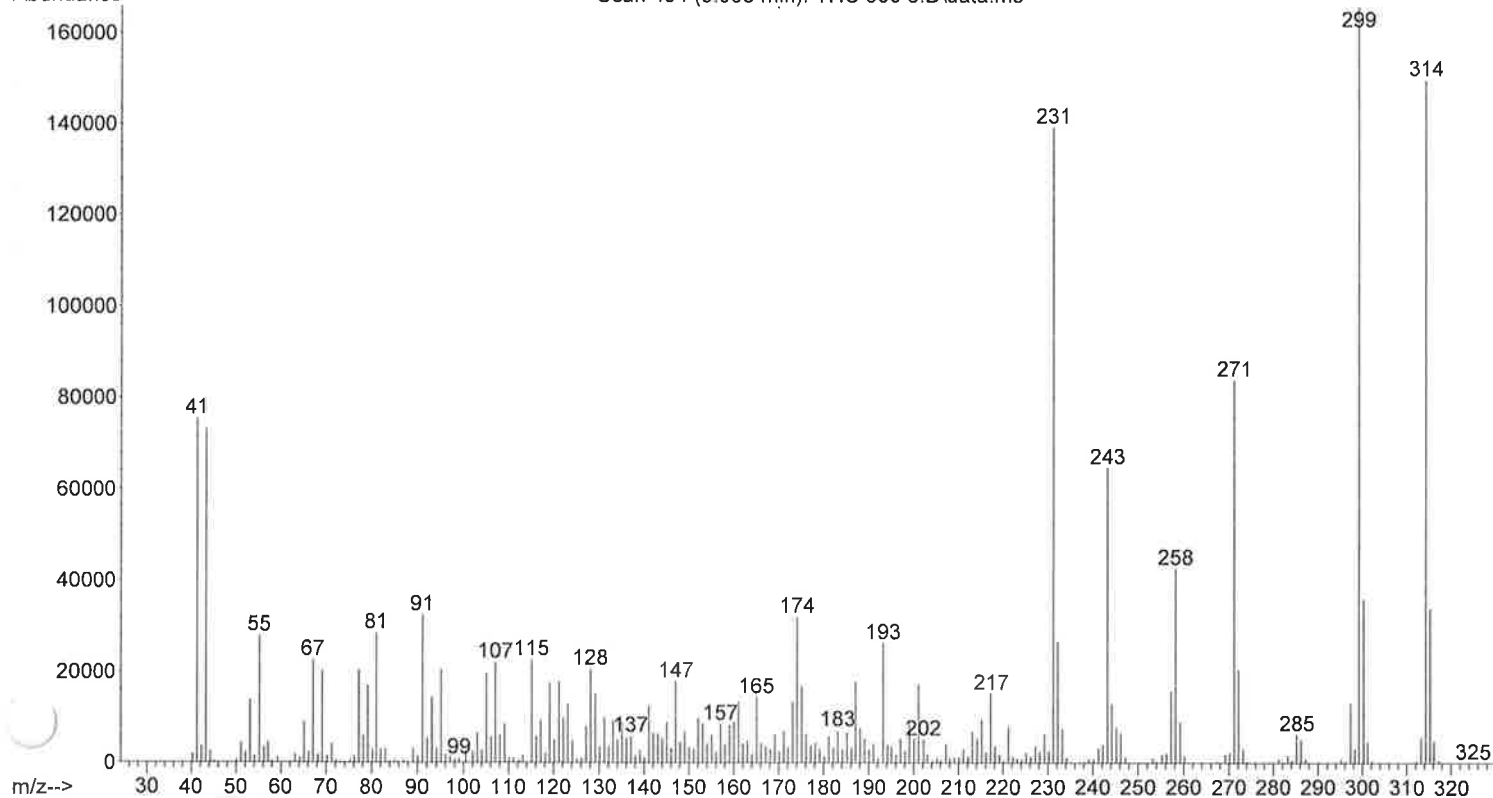
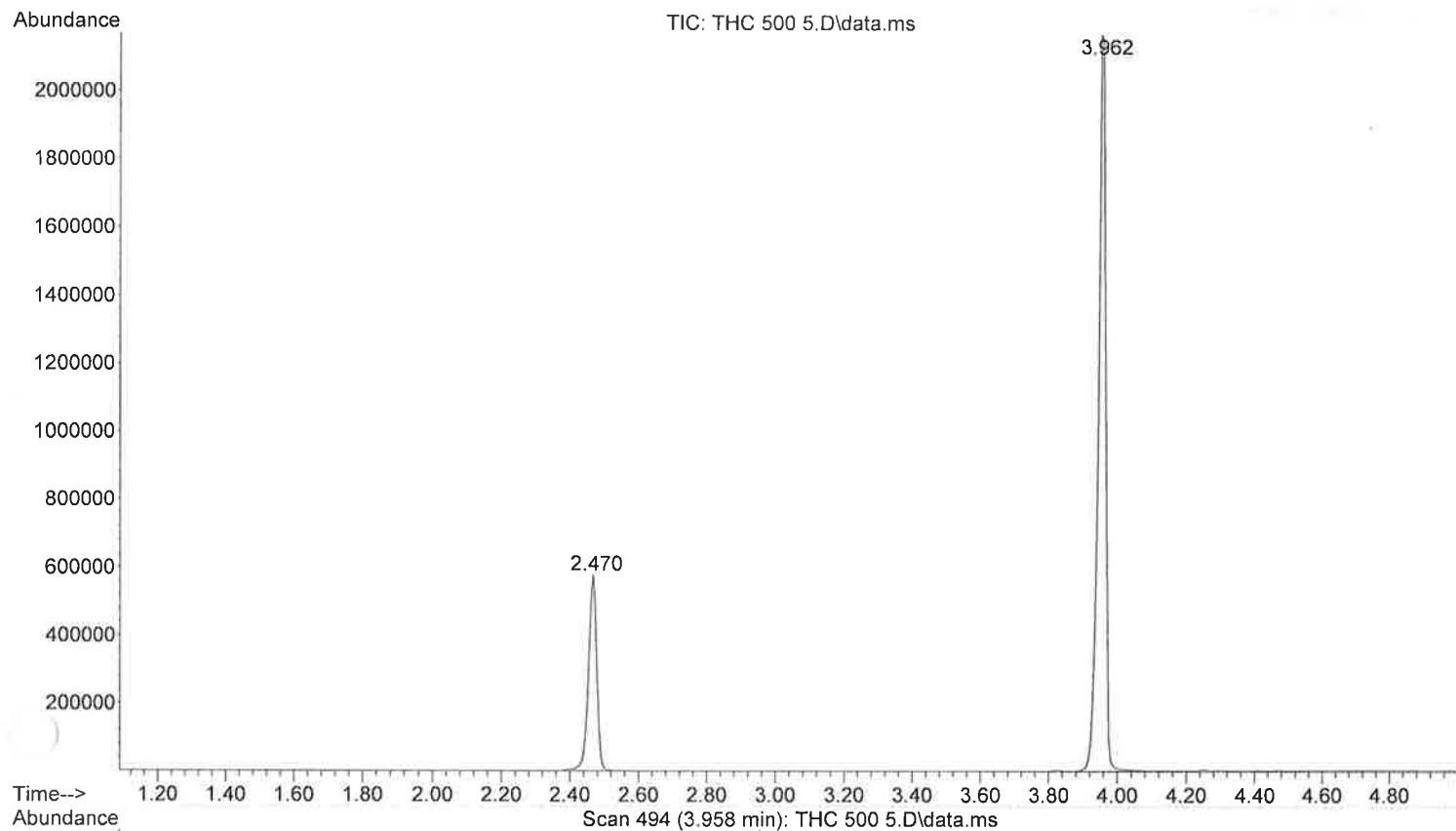
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Vial Number: 27

8/13/19
BT



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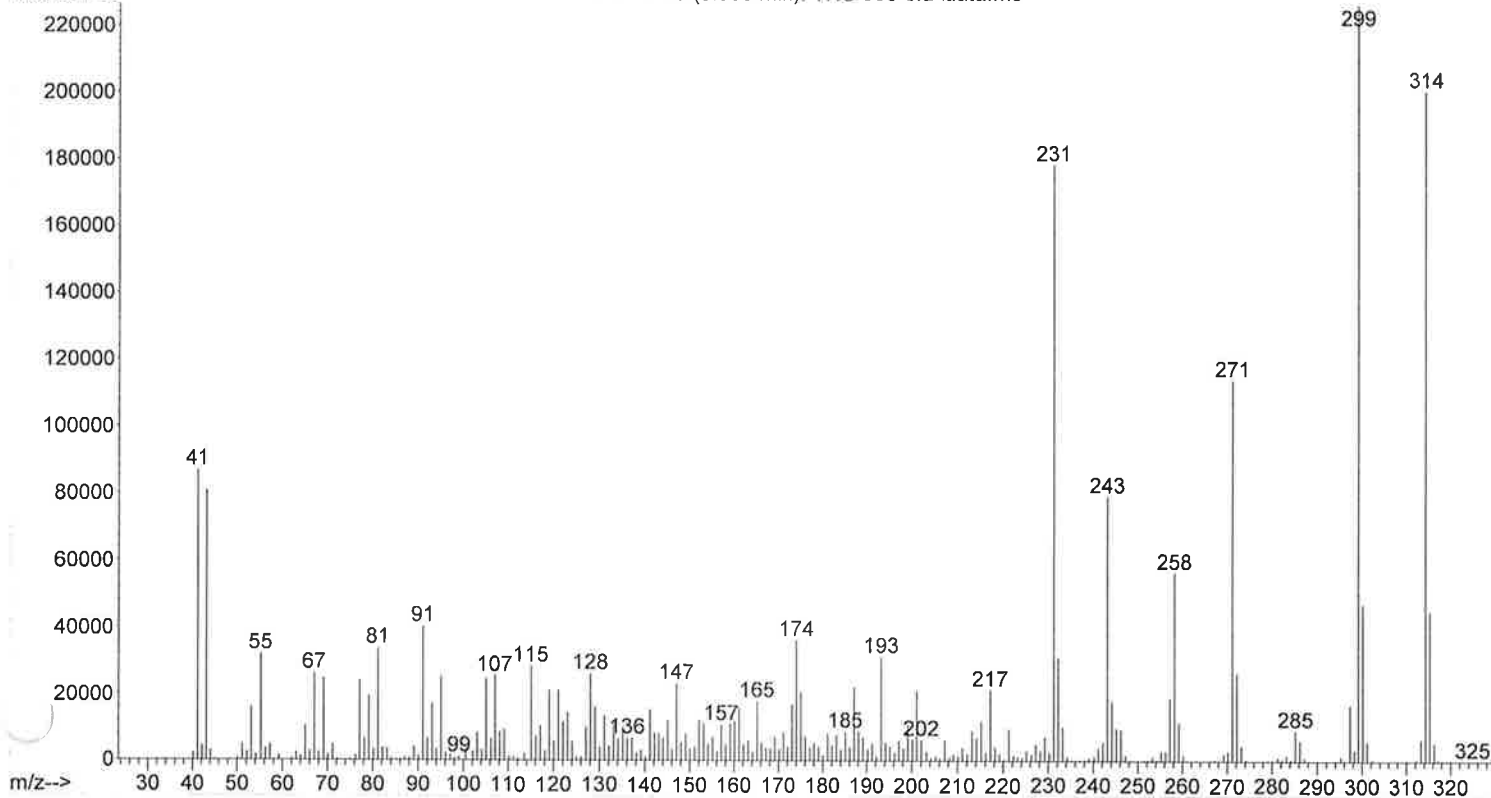
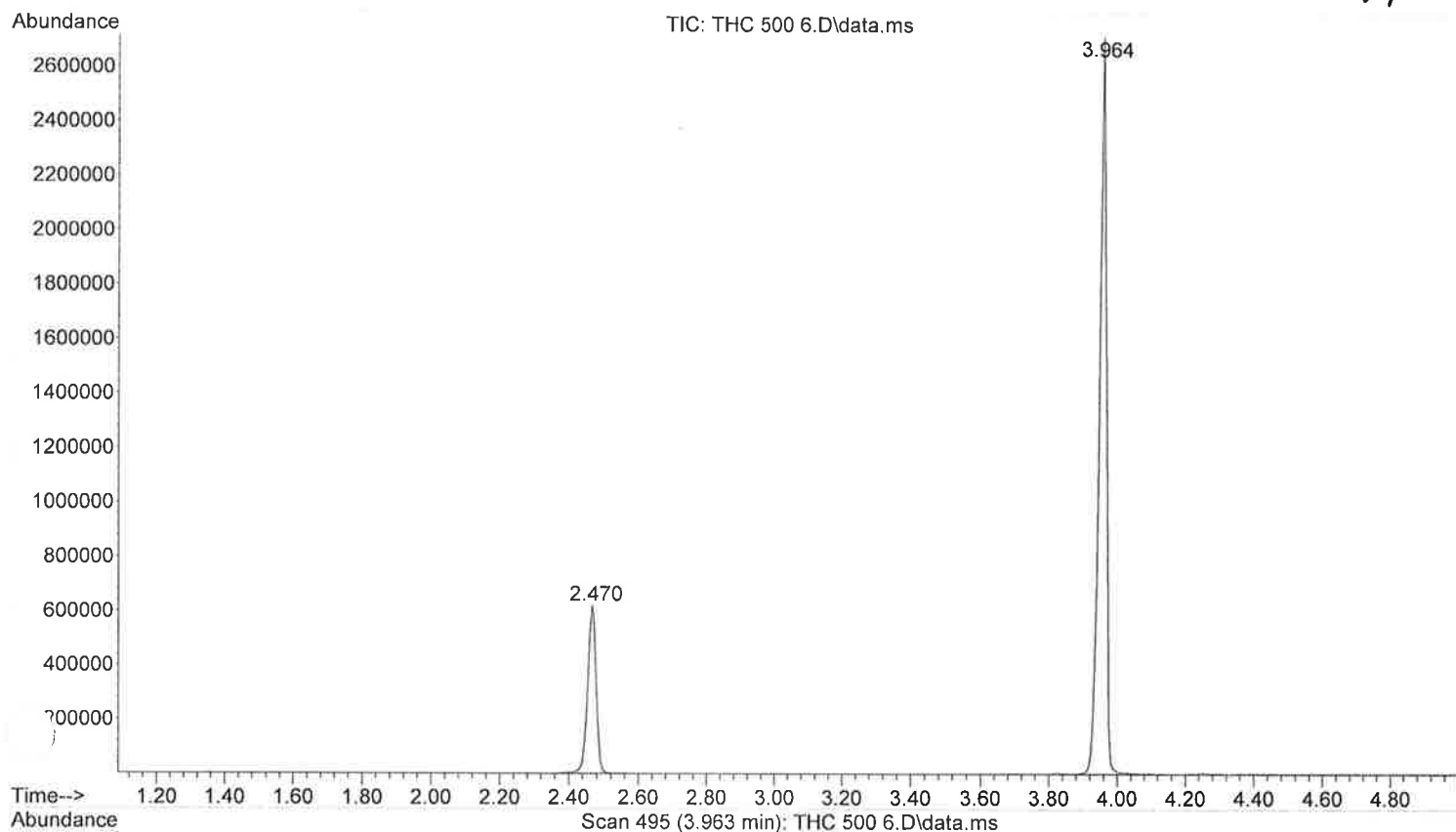
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8/13/19
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8/13/19
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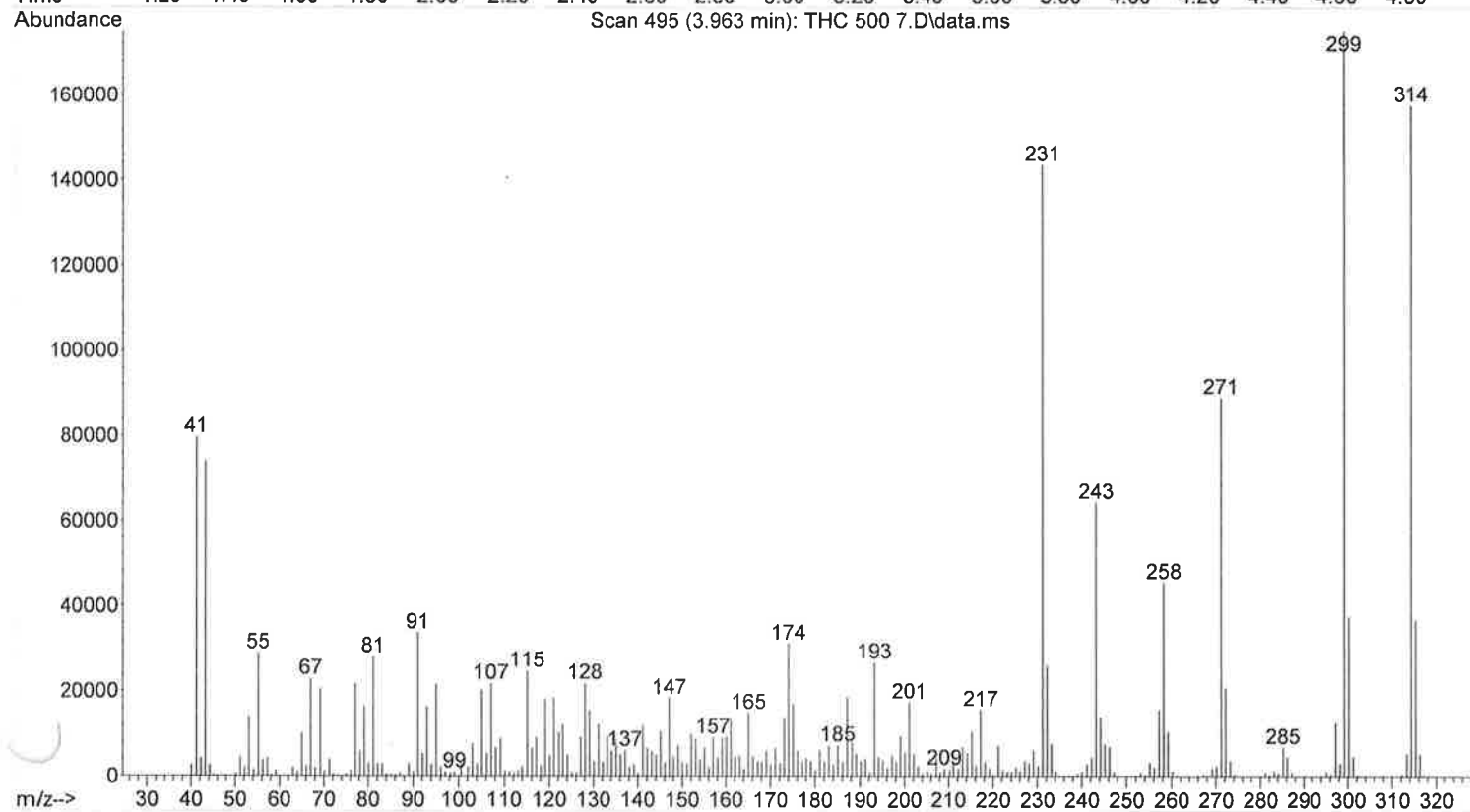
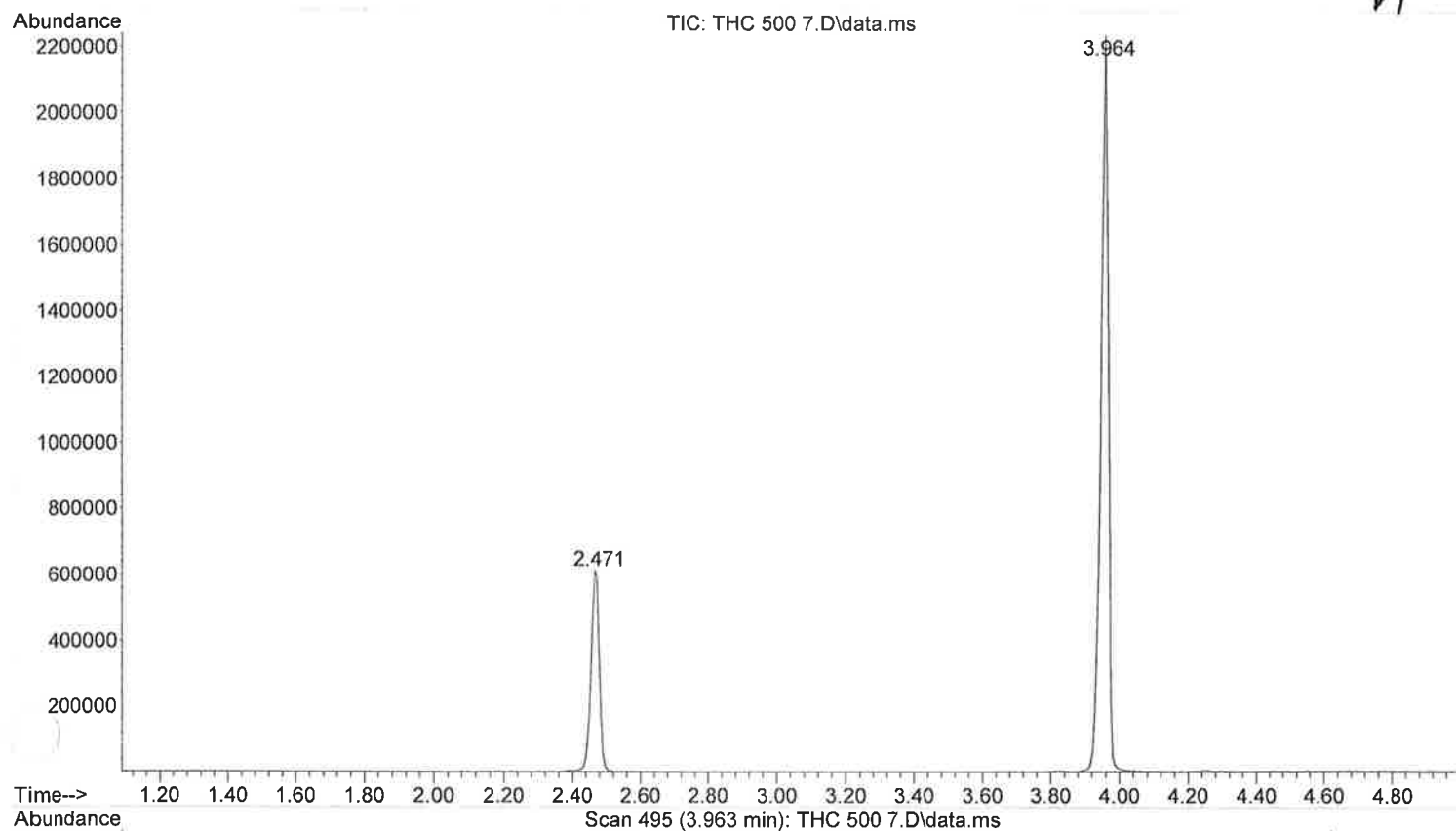
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Instrument : Gumbo
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Misc Info : Methanol
Vial Number: 27

8/13/19

BT



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2	3.964	480	495	517	BB	2093638	32967430	100.00%	75.880%

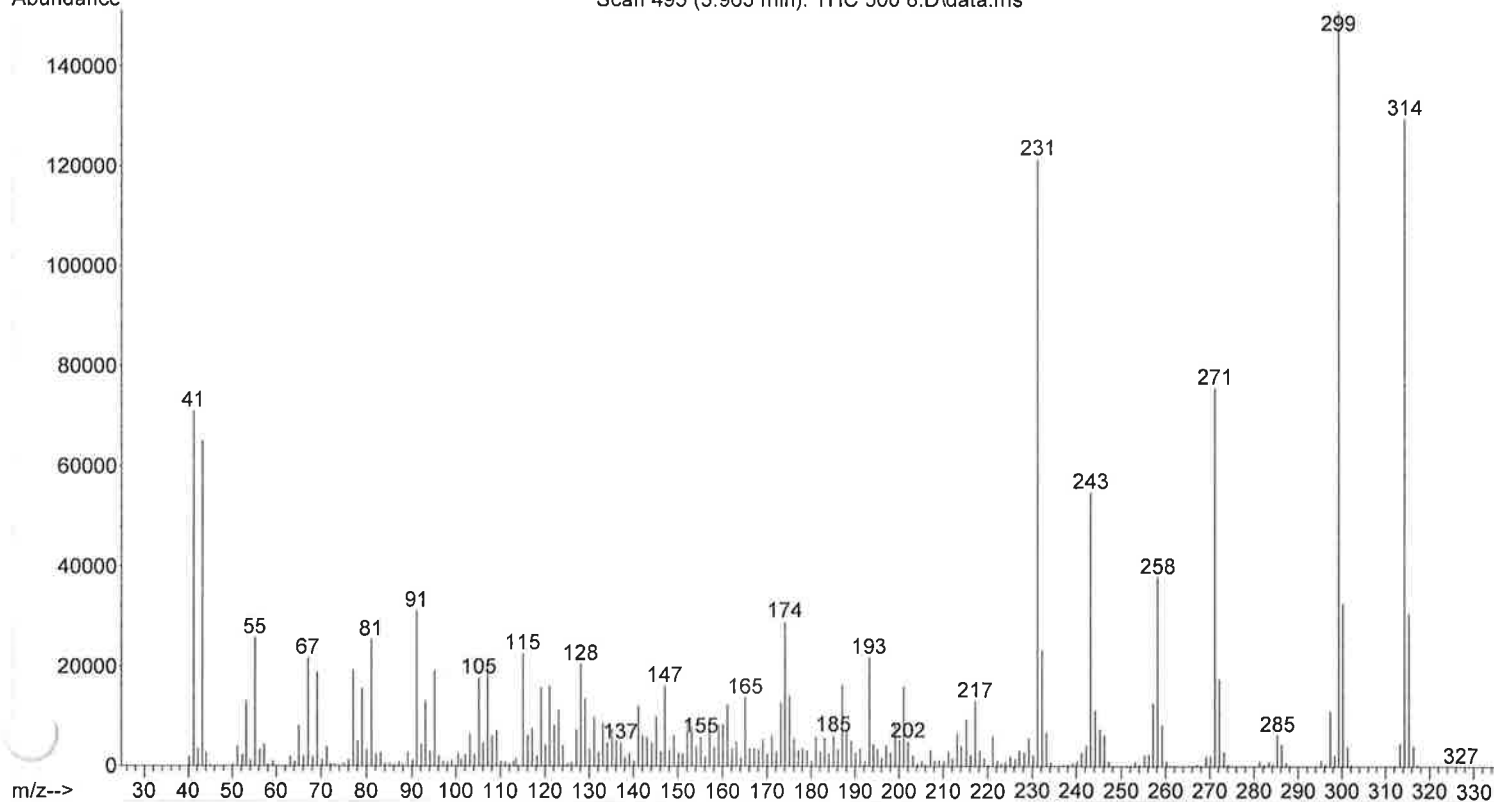
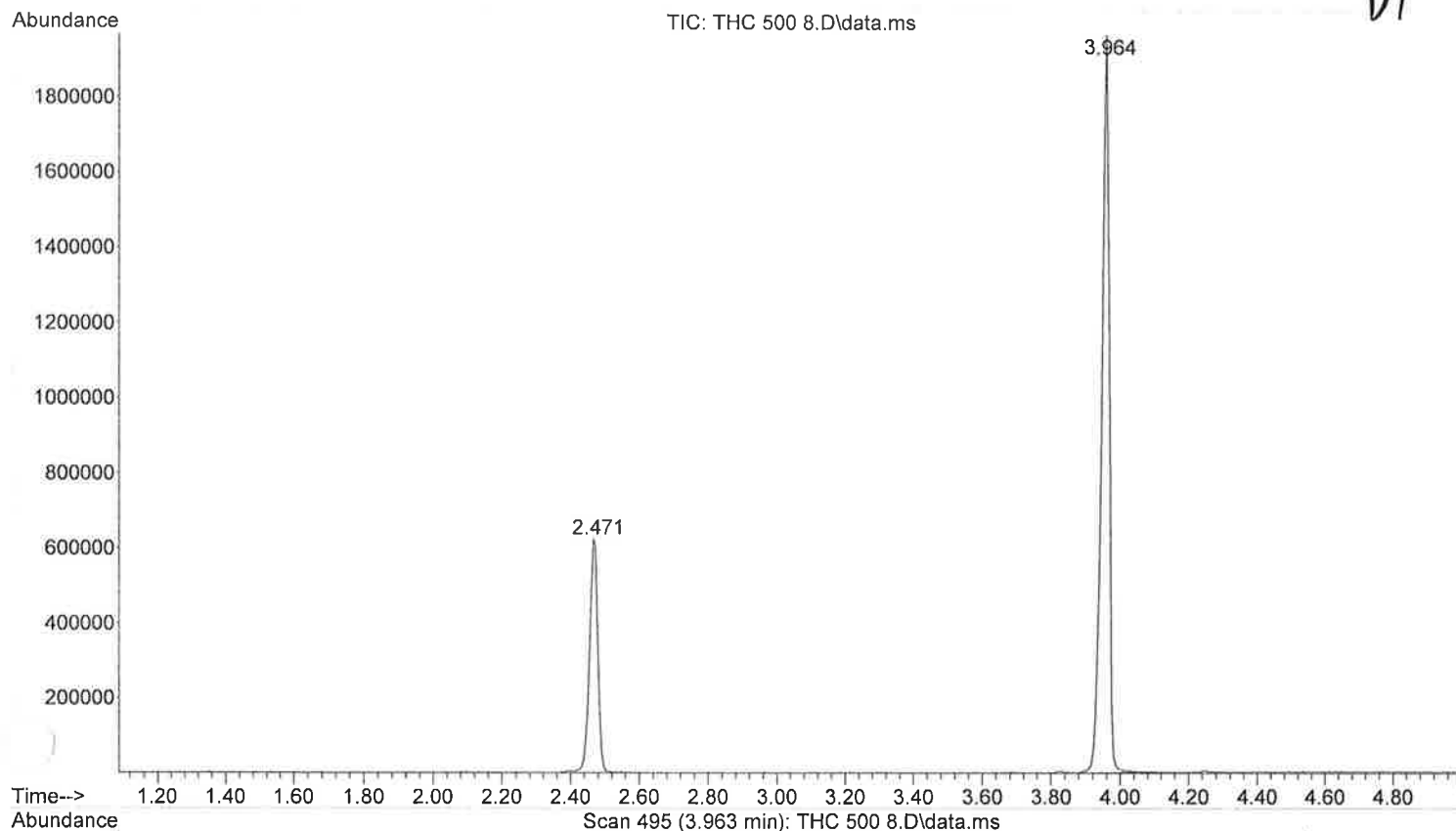
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8/13/19
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Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 8.D
Acq On : 12 Aug 2019 16:28
Operator : BTT
Sample : Standard
ALS Vial : 27 Sample Multiplier: 1

8/12/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 8.D\data.ms

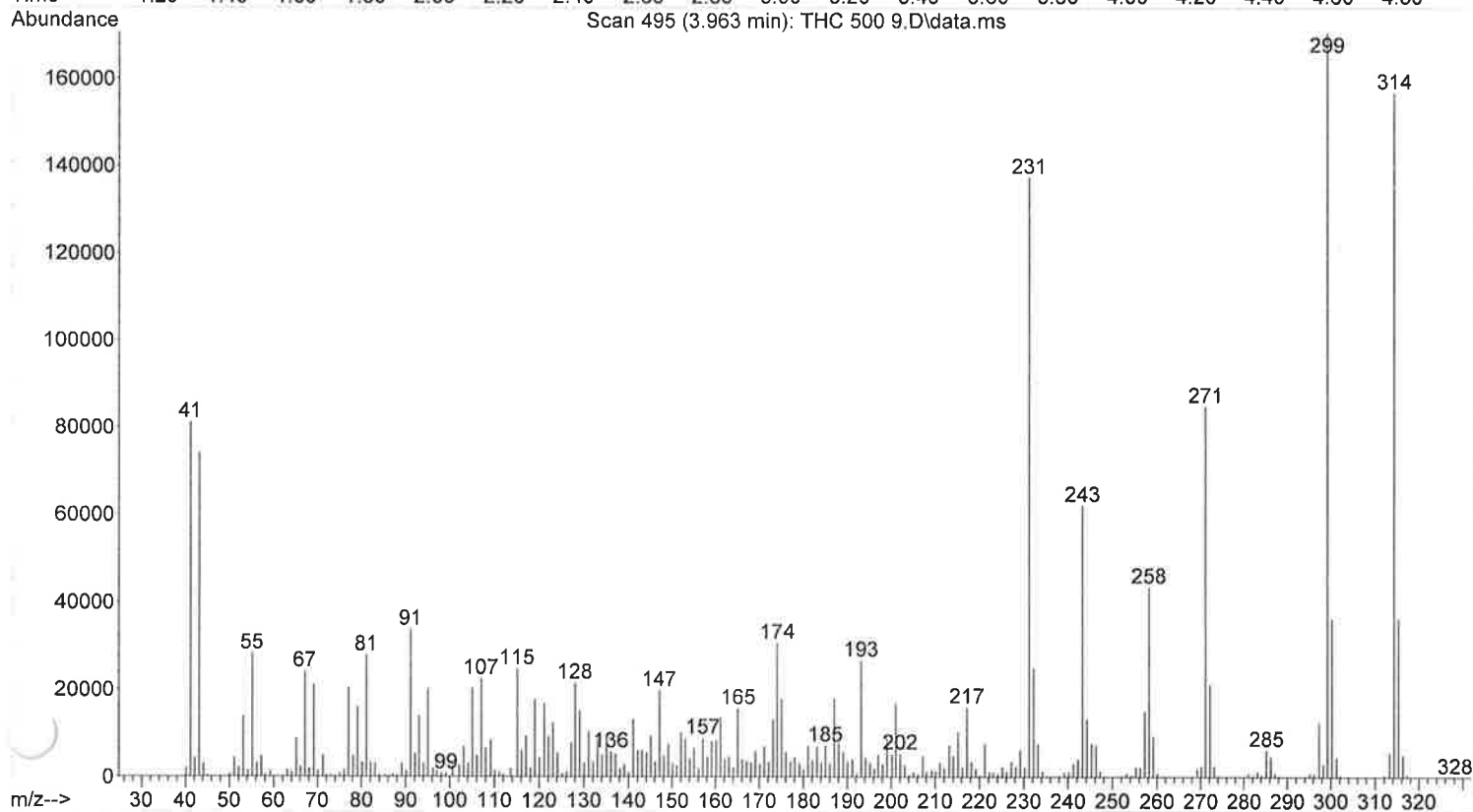
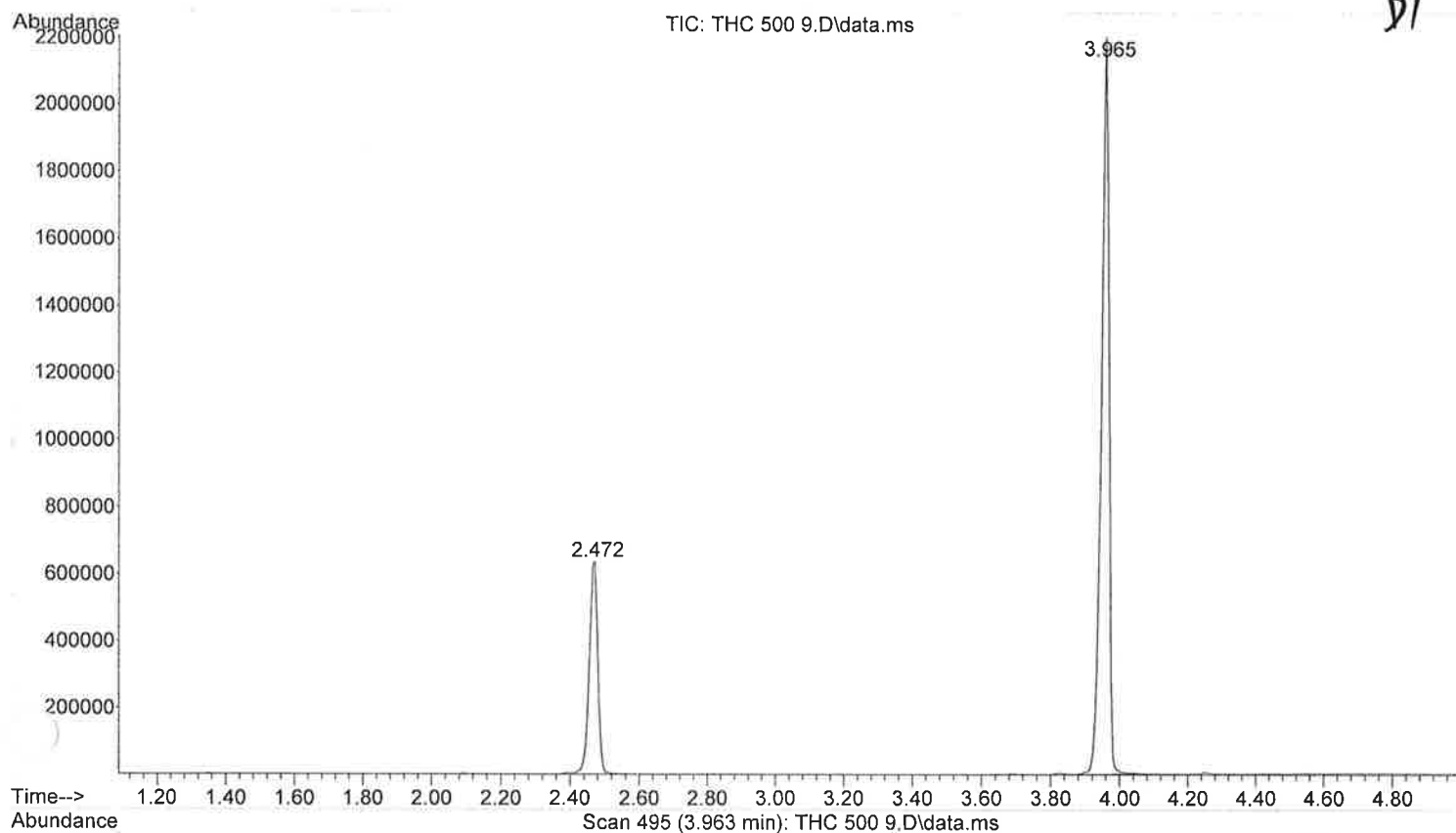
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.471	221	239	259	BB	620663	10462257	35.33%	26.104%
2	3.964	480	495	523	BB	1872594	29616555	100.00%	73.896%

Sum of corrected areas: 40078812

MSDRUGS100.M Tue Aug 13 07:53:47 2019

File : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 9.D
Operator : BTT
Acquired : 12 Aug 2019 16:51 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 9.D
Acq On : 12 Aug 2019 16:51
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/14
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 9.D\data.ms

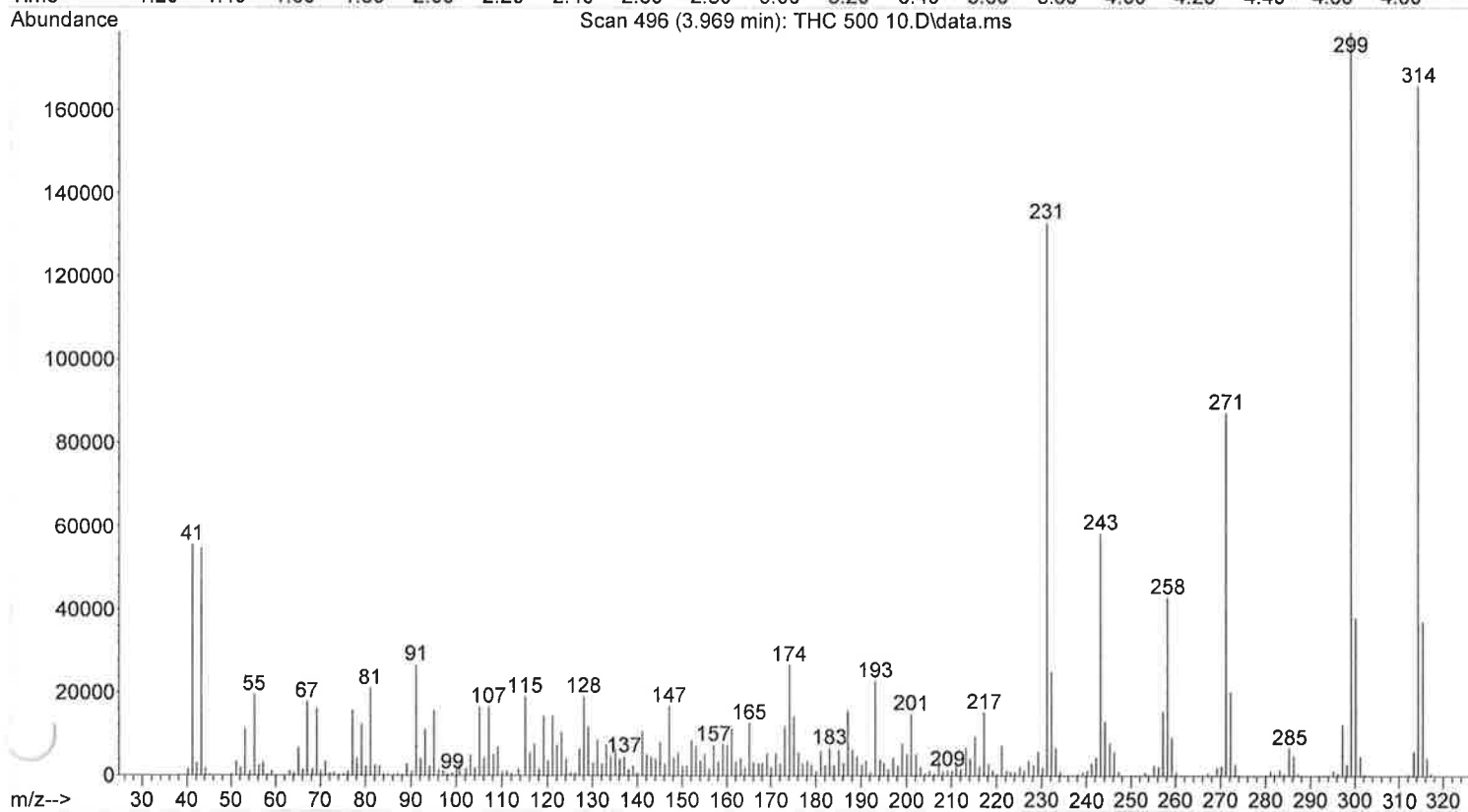
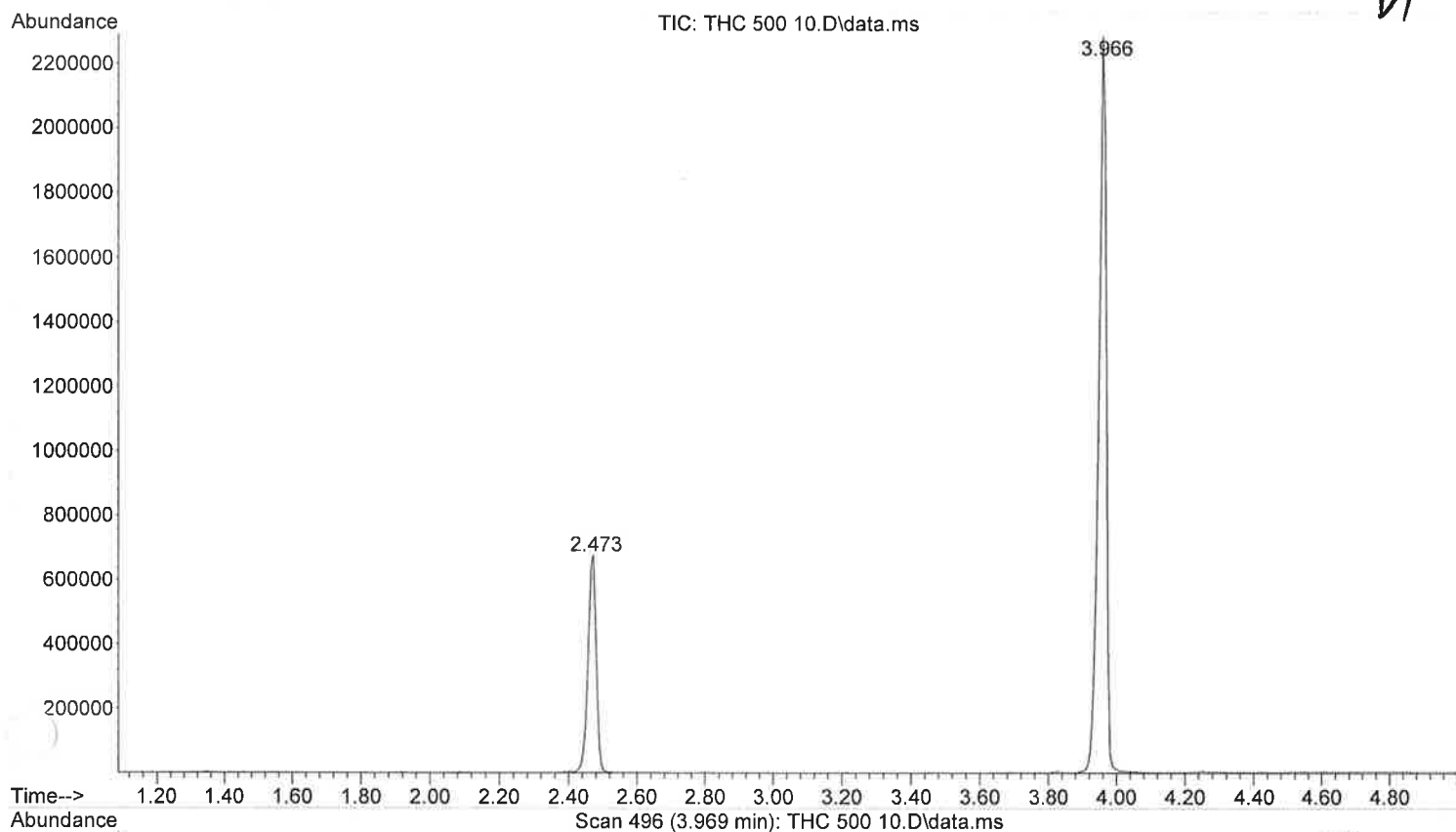
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.472	220	239	259	BB	642023	11007658	32.57%	24.569%
2	3.965	479	495	517	BV	2091036	33796276	100.00%	75.431%

Sum of corrected areas: 44803934

MSDRUGS100.M Tue Aug 13 07:54:22 2019

File : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 10.D
Operator : BTT
Acquired : 12 Aug 2019 17:15 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 10.D
Acq On : 12 Aug 2019 17:15
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 10.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.473	222	239	254	BB	672692	11309174	32.34%	24.437%
2	3.966	480	496	522	BB	2233189	34970567	100.00%	75.563%

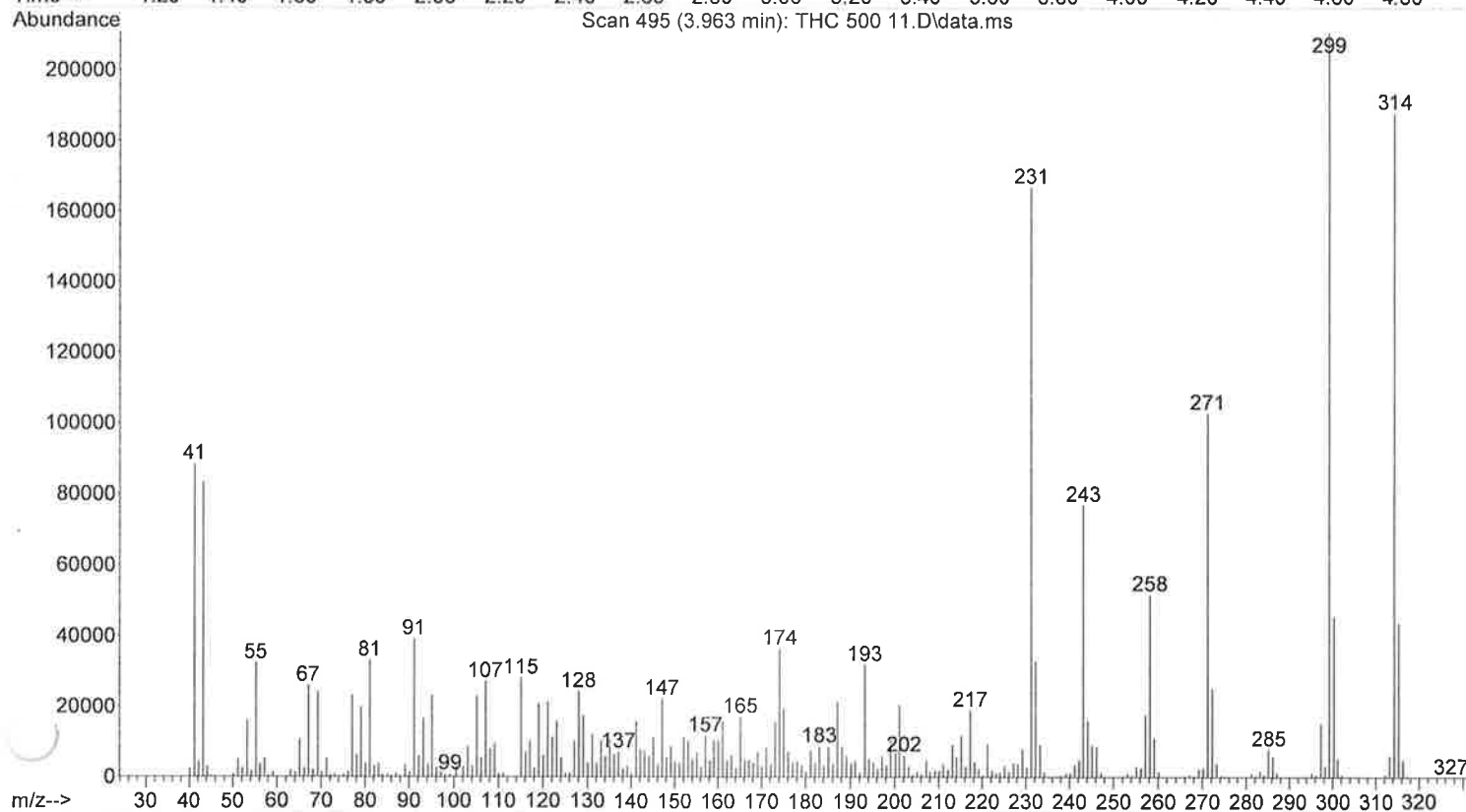
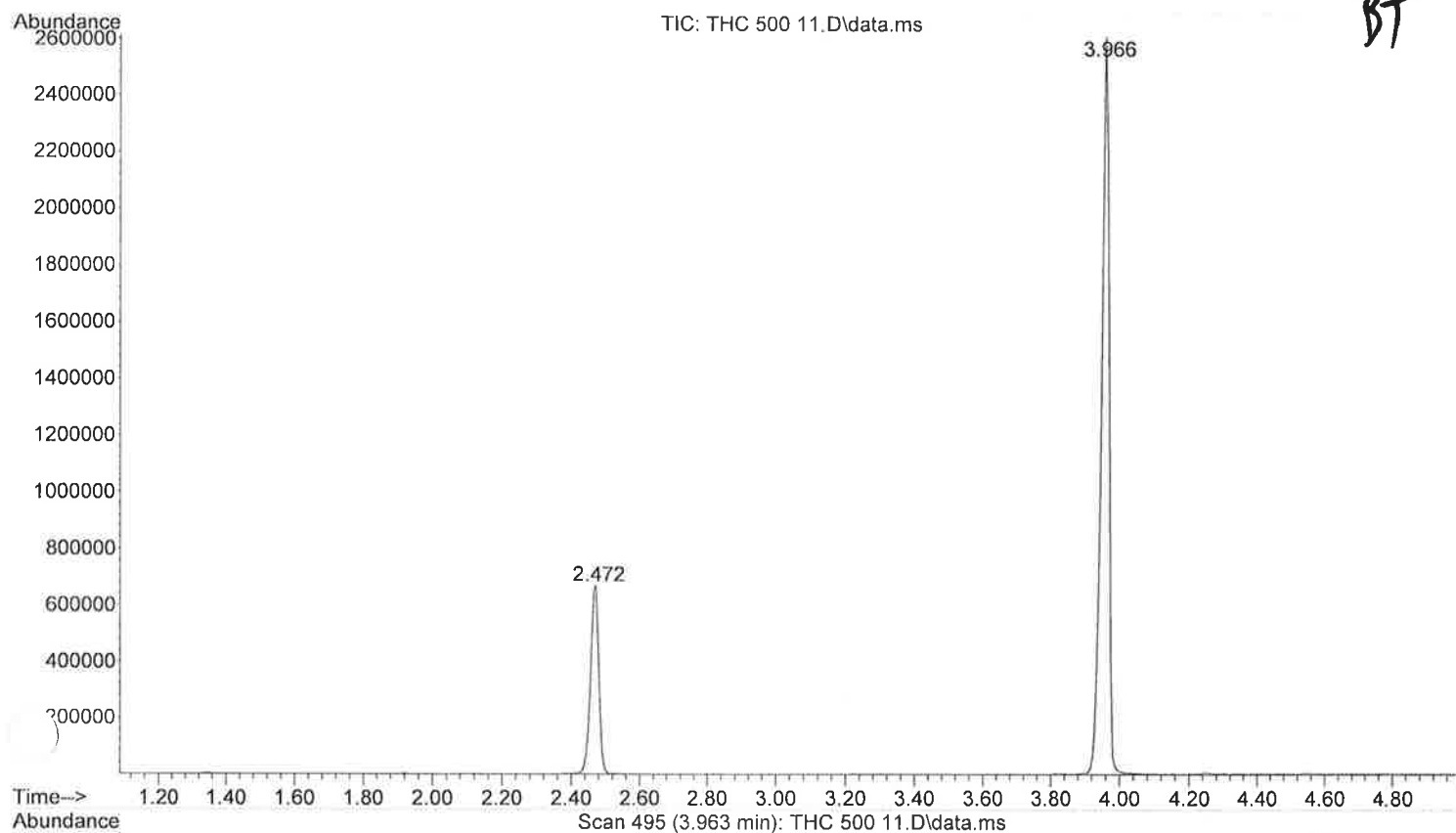
Sum of corrected areas: 46279741

MSDRUGS100.M Tue Aug 13 07:54:55 2019

8/13/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 11.D
Operator : BTT
Acquired : 12 Aug 2019 17:38 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 11.D
Acq On : 12 Aug 2019 17:38
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 11.D\data.ms

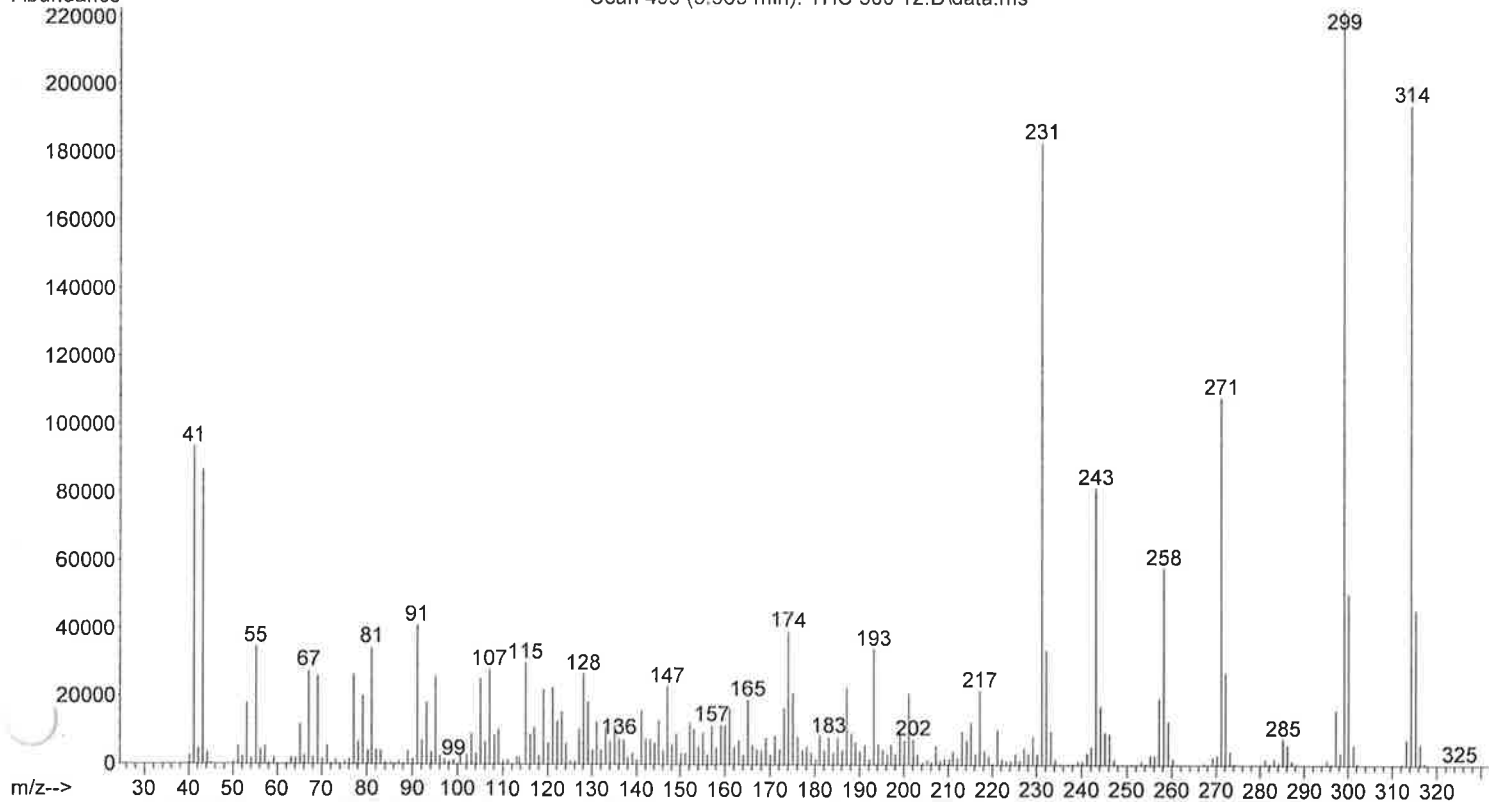
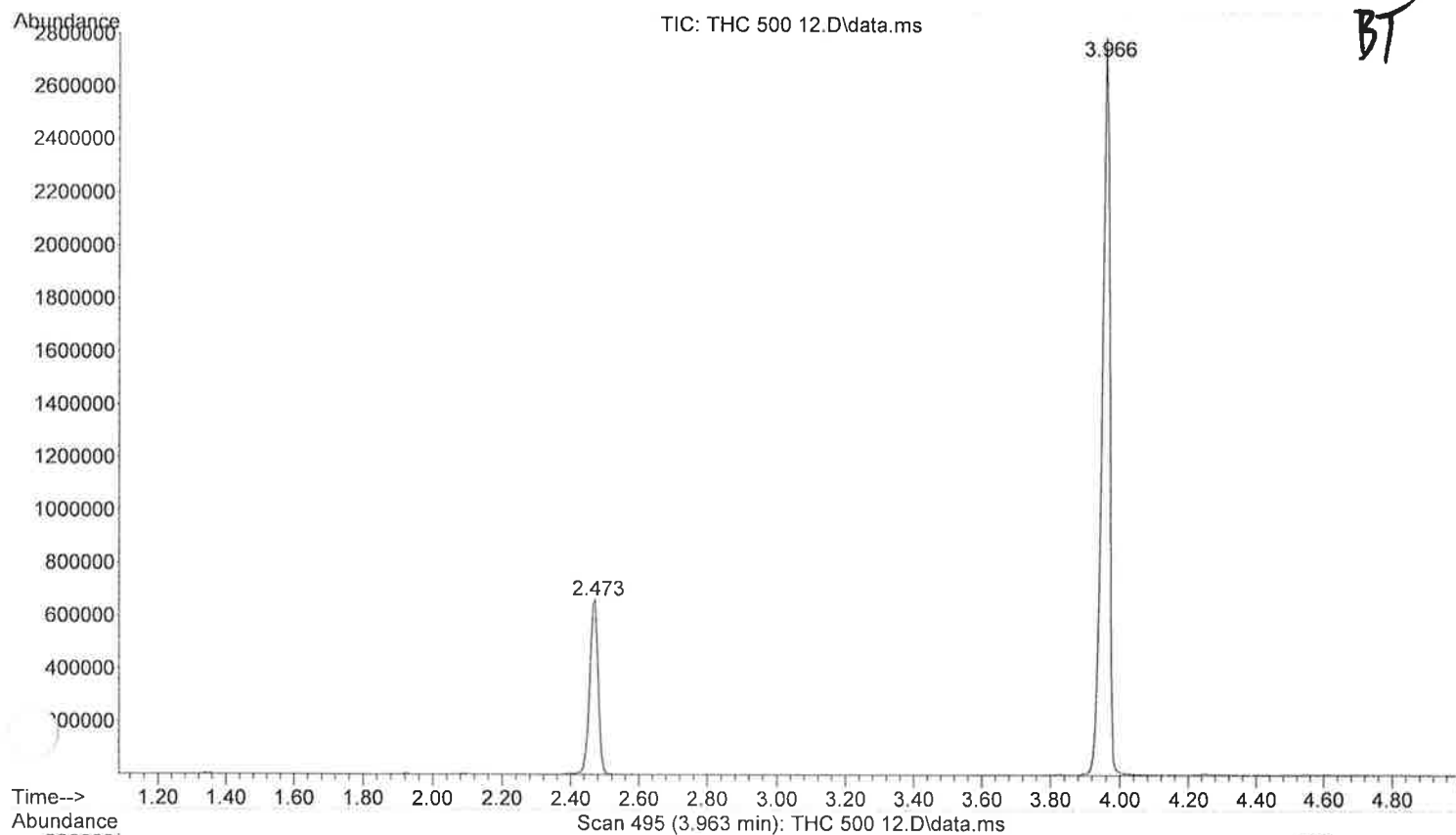
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.472	222	239	258	BB	672316	11288885	28.75%	22.331%
2	3.966	479	495	523	VB	2539095	39263786	100.00%	77.669%

Sum of corrected areas: 50552671

MSDRUGS100.M Tue Aug 13 07:55:26 2019

File : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 12.D
Operator : BTT
Acquired : 12 Aug 2019 18:02 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 12.D
Acq On : 12 Aug 2019 18:02
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 12.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.473	214	239	254	BB	663268	11367672	27.22%	21.397%
2	3.966	479	495	523	BB	2713022	41760376	100.00%	78.603%

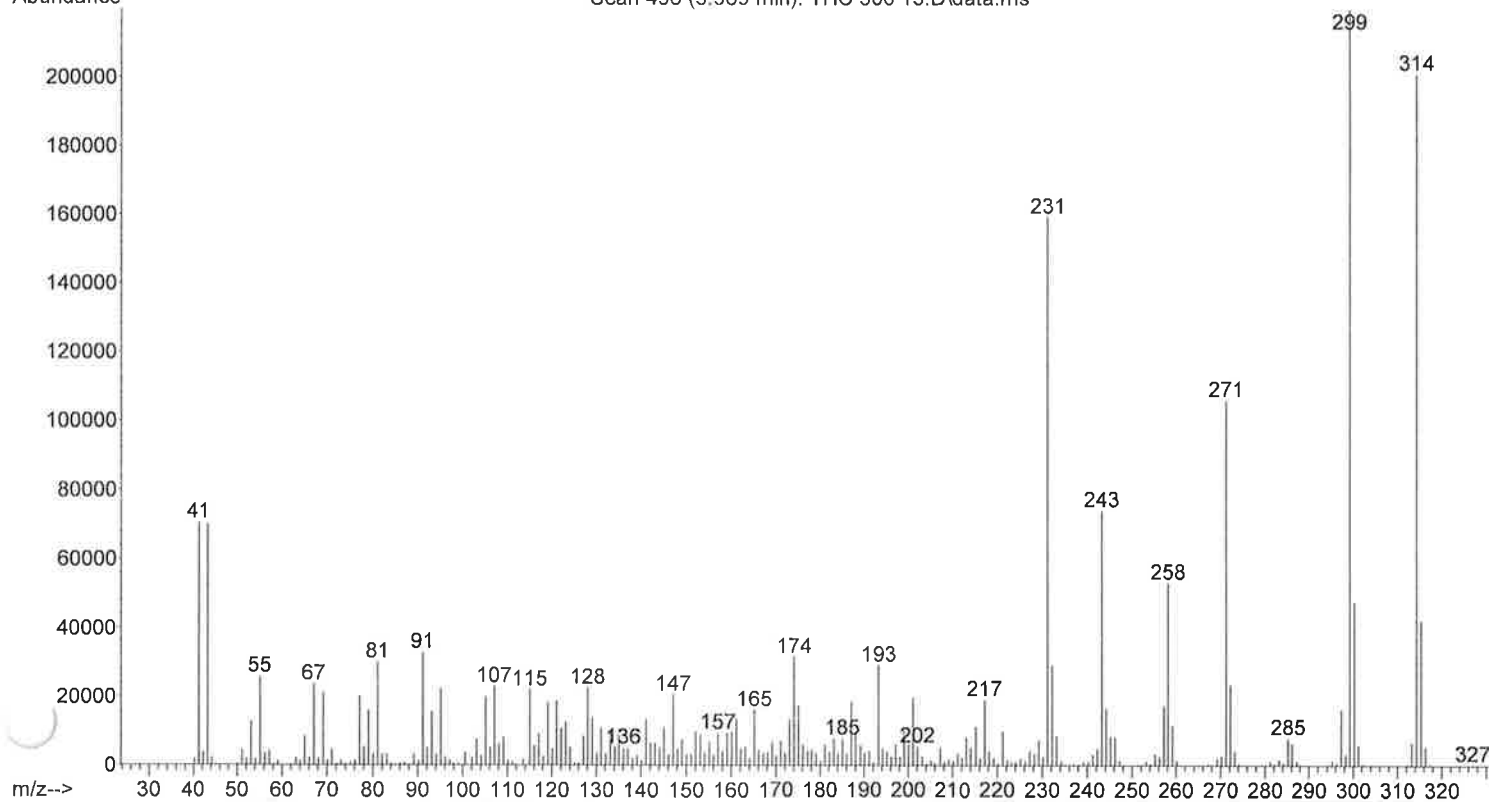
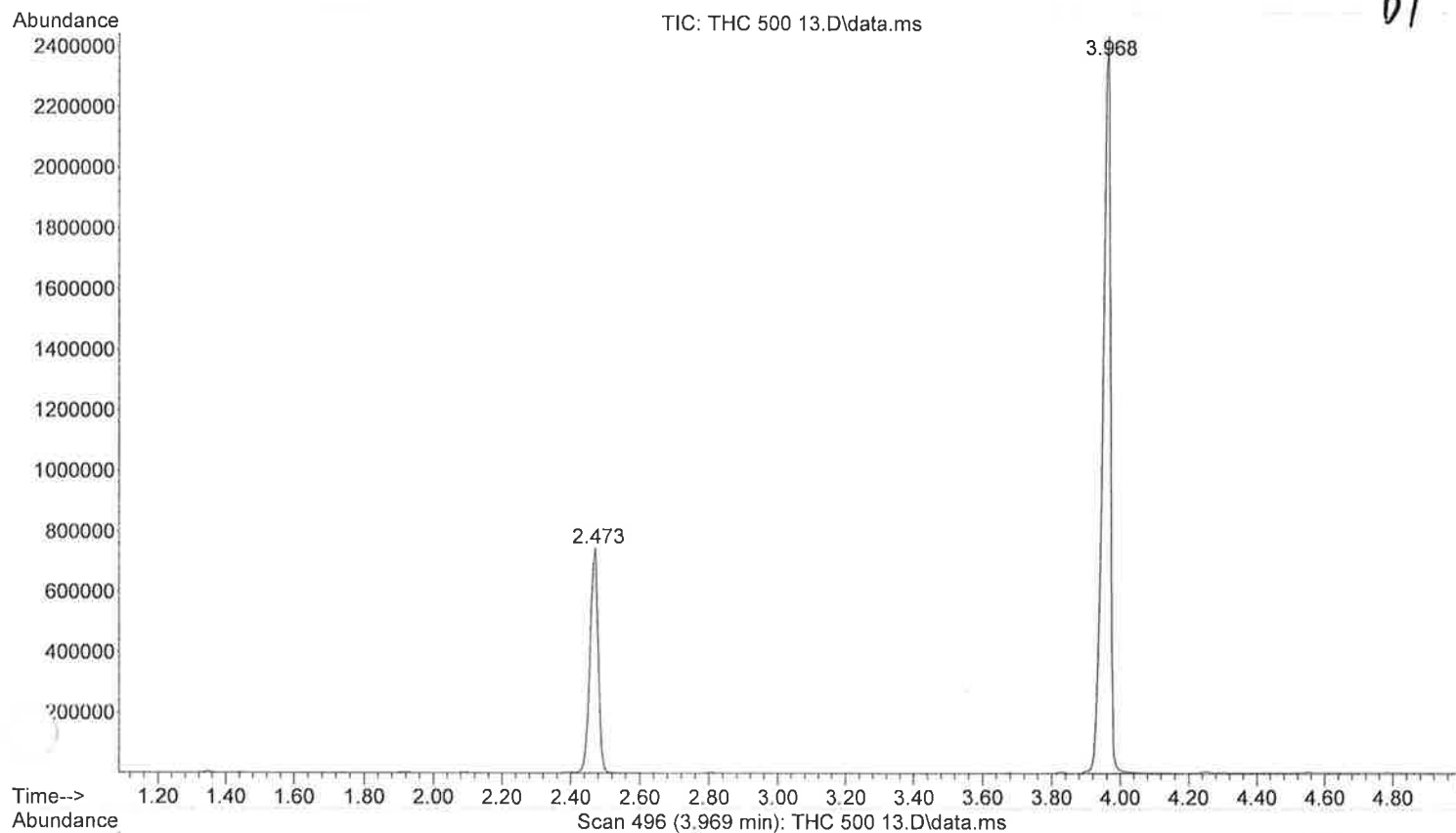
Sum of corrected areas: 53128048

MSDRUGS100.M Tue Aug 13 07:55:58 2019

8/13/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 13.D
Operator : BTT
Acquired : 12 Aug 2019 18:25 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 13.D
Acq On : 12 Aug 2019 18:25
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 13.D\data.ms

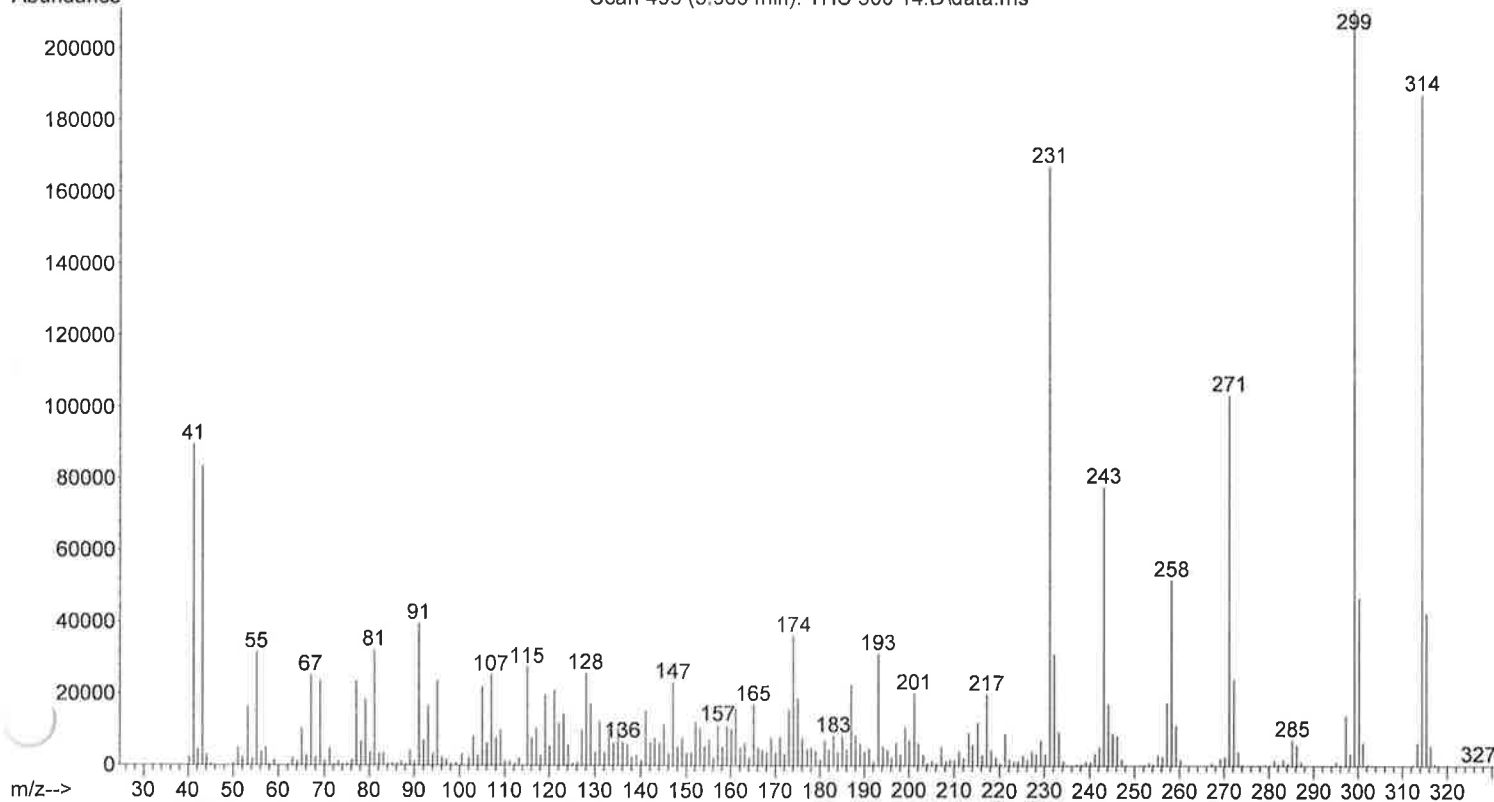
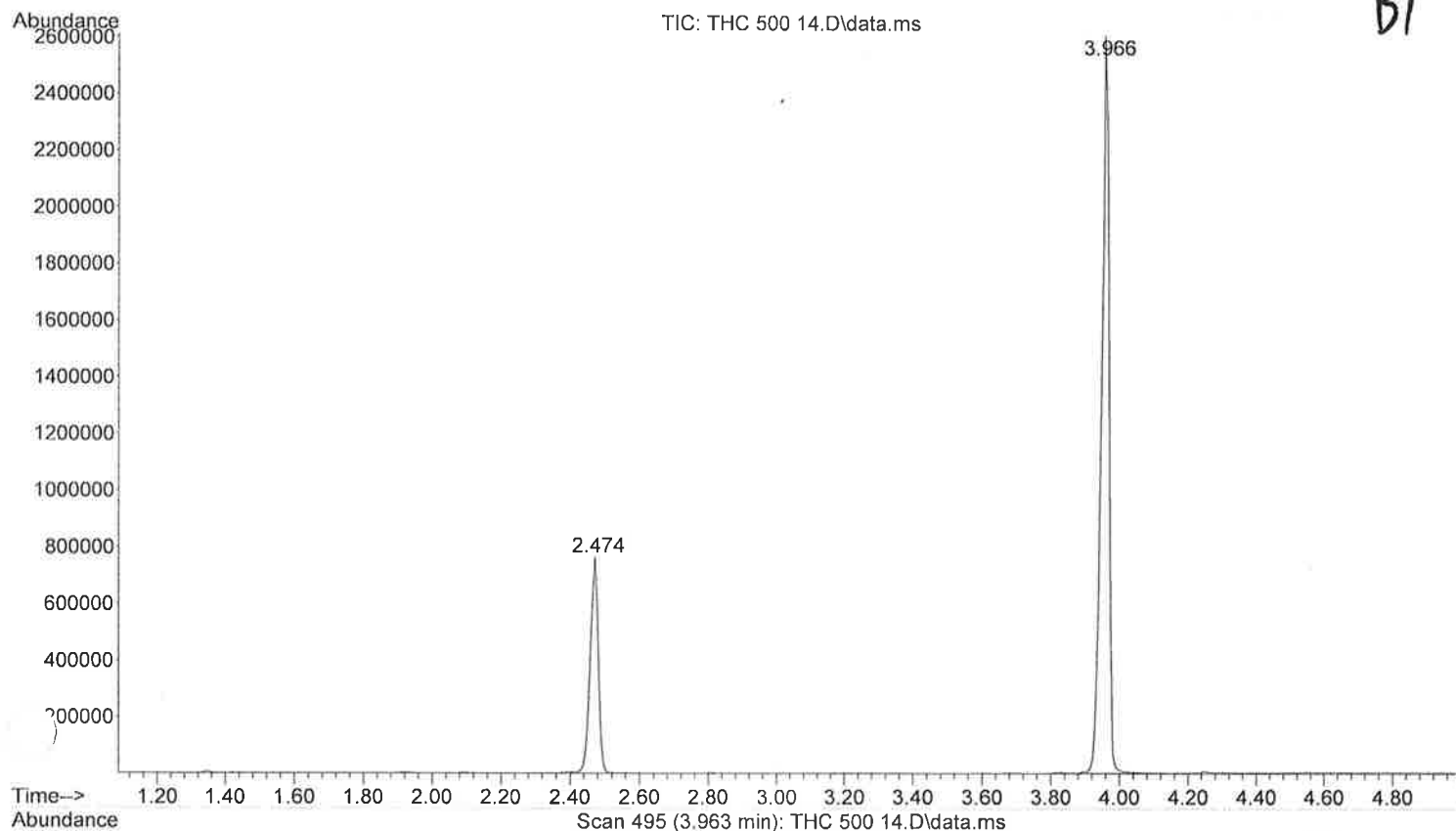
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.473	220	239	252	BB	737860	12169433	32.96%	24.789%
2	3.968	479	496	522	BB	2384495	36923530	100.00%	75.211%

Sum of corrected areas: 49092963

MSDRUGS100.M Tue Aug 13 07:56:25 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 14.D
Operator : BTT
Acquired : 12 Aug 2019 18:49 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Mi fo : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 14.D
Acq On : 12 Aug 2019 18:49
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 14.D\data.ms

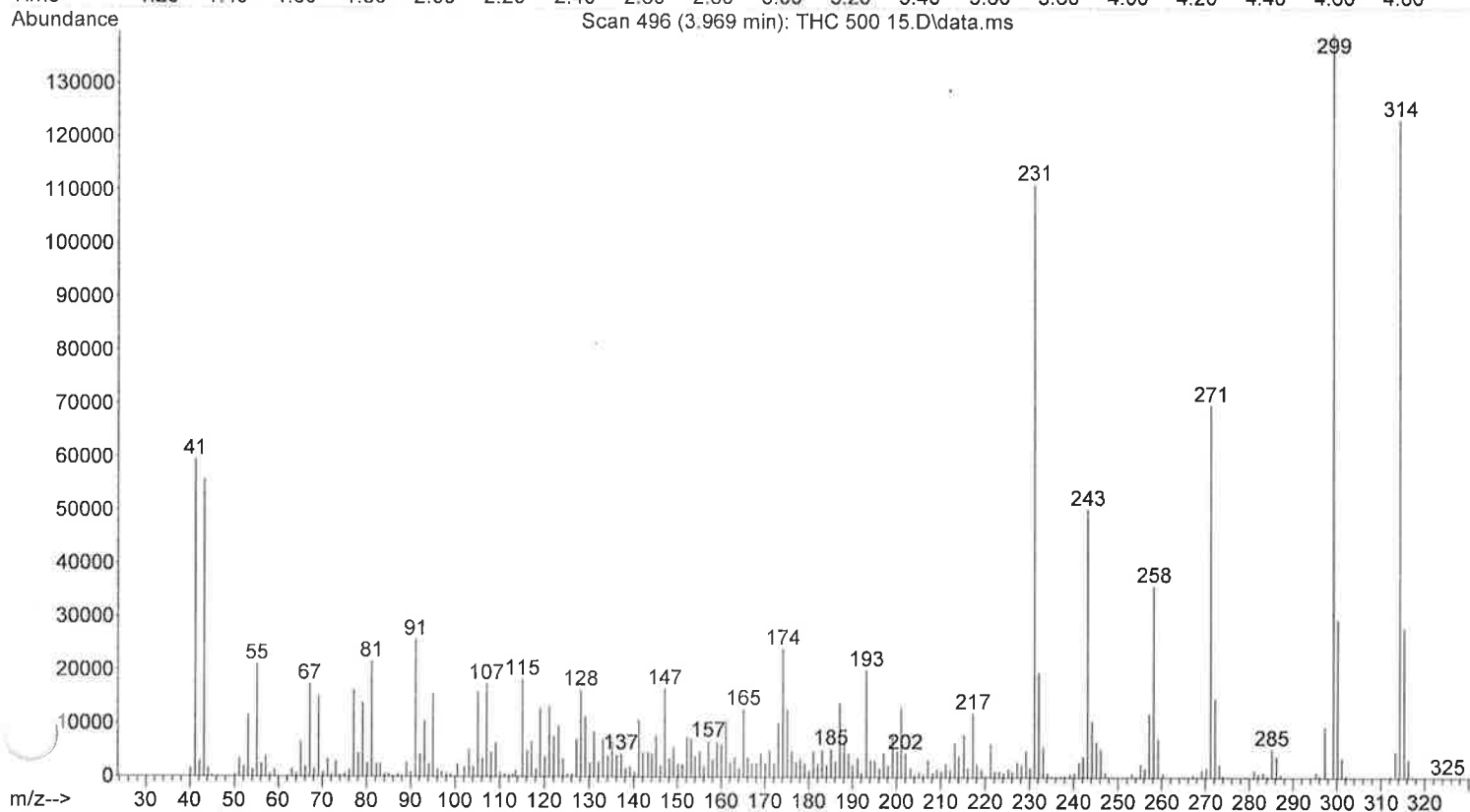
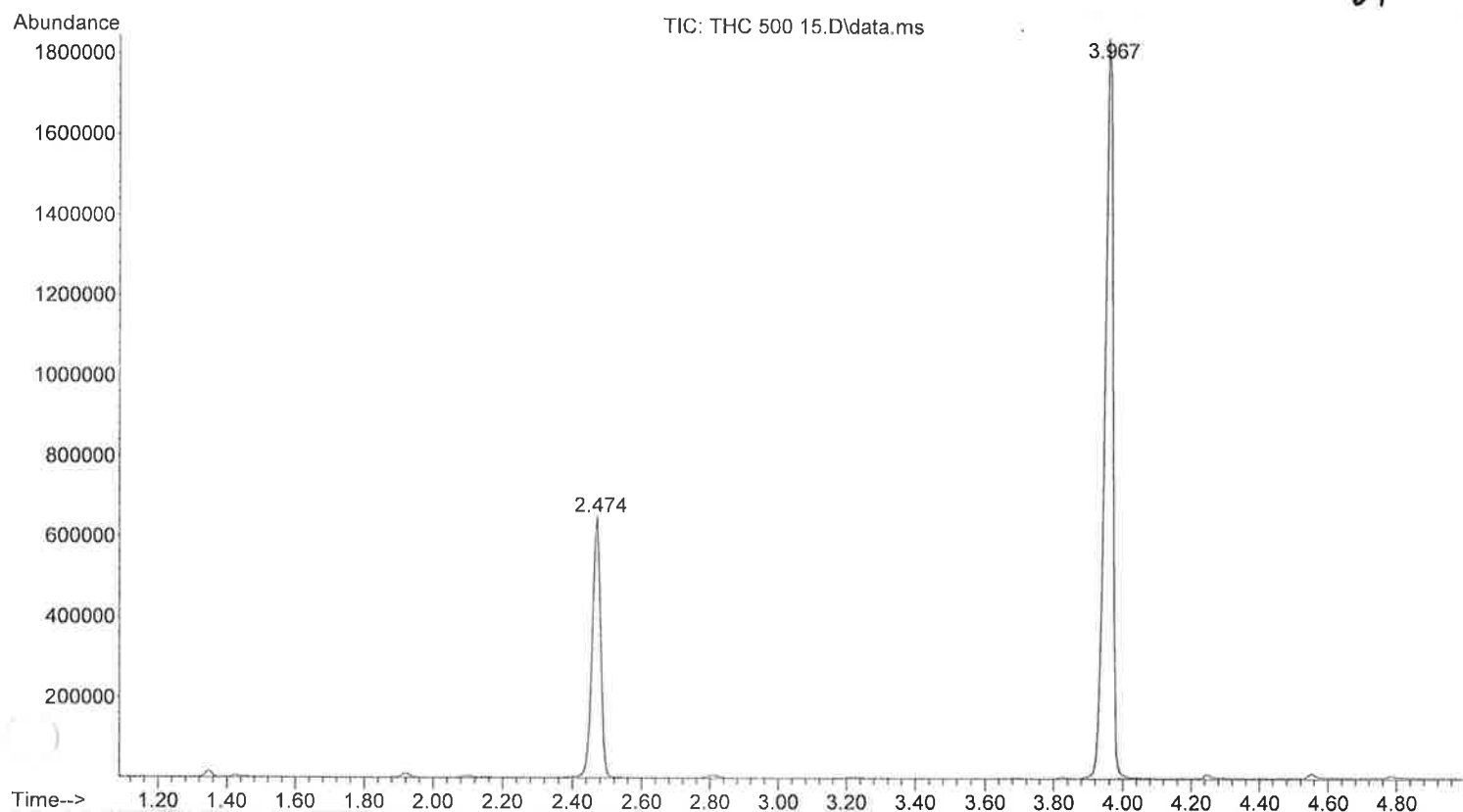
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.474	228	239	256	VB	742053	12467524	32.10%	24.300%
2	3.967	480	496	521	BB	2535446	38838444	100.00%	75.700%

Sum of corrected areas: 51305968

MSDRUGS100.M Tue Aug 13 07:56:53 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 15.D
Operator : BTT
Acquired : 13 Aug 2019 8:01 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 15.D
Acq On : 13 Aug 2019 8:01
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 15.D\data.ms

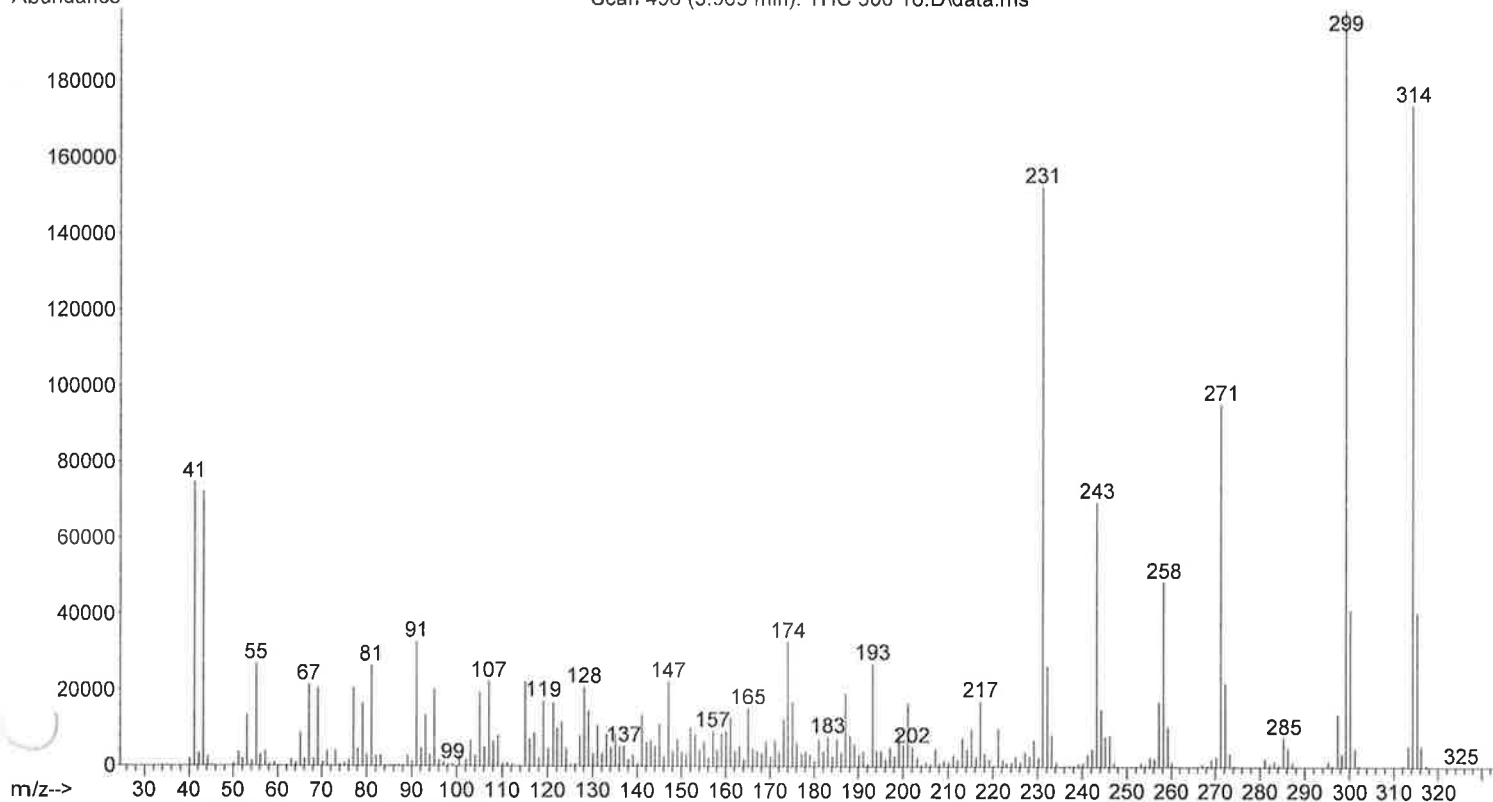
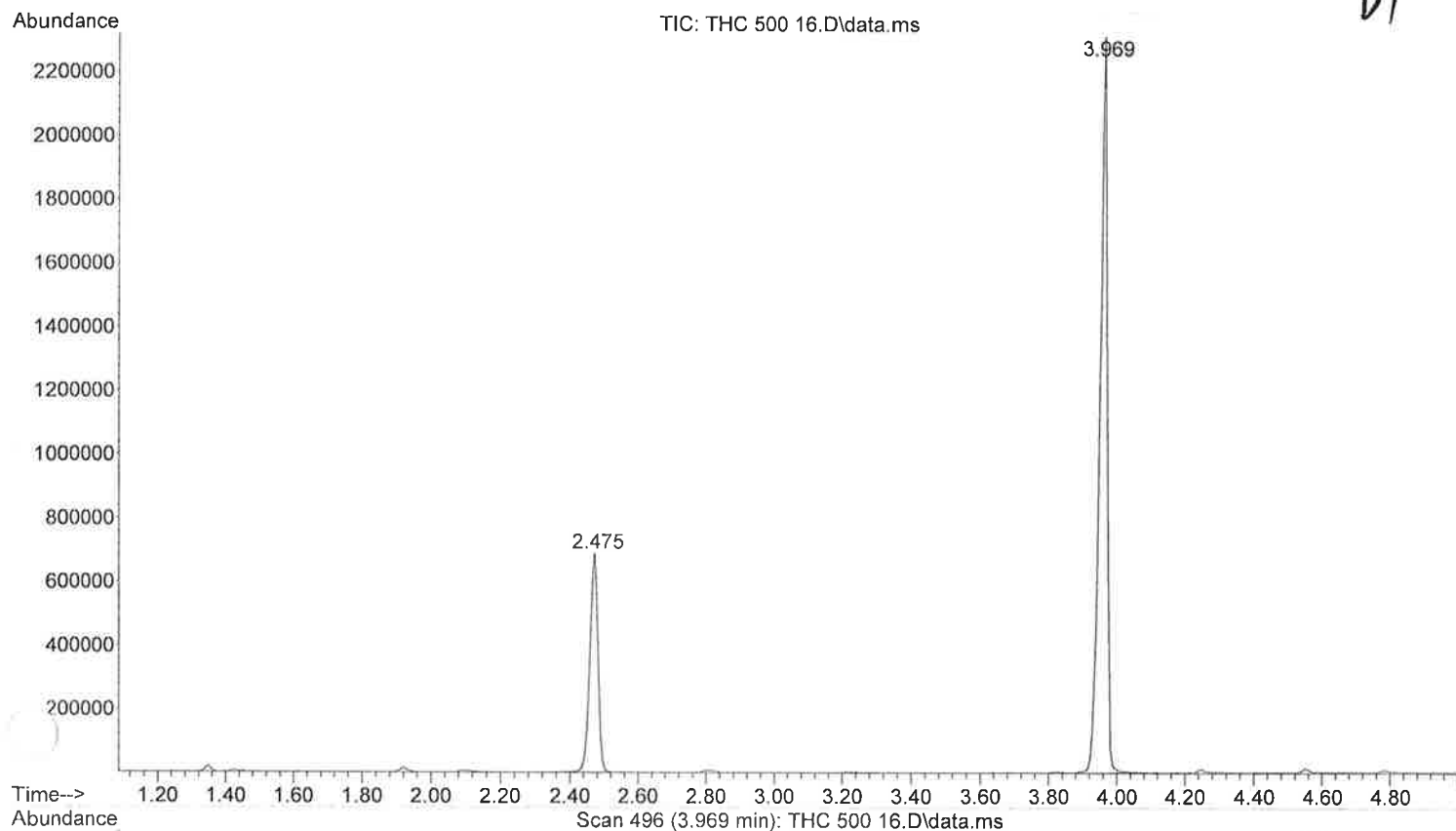
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.474	221	239	258	BB	639055	10867145	36.74%	26.869%
2	3.967	479	496	520	BV	1841798	29578063	100.00%	73.131%

Sum of corrected areas: 40445208

MSDRUGS100.M Tue Aug 13 10:50:58 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 16.D
Operator : BTT
Acquired : 13 Aug 2019 8:24 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 16.D
Acq On : 13 Aug 2019 8:24
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 16.D\data.ms

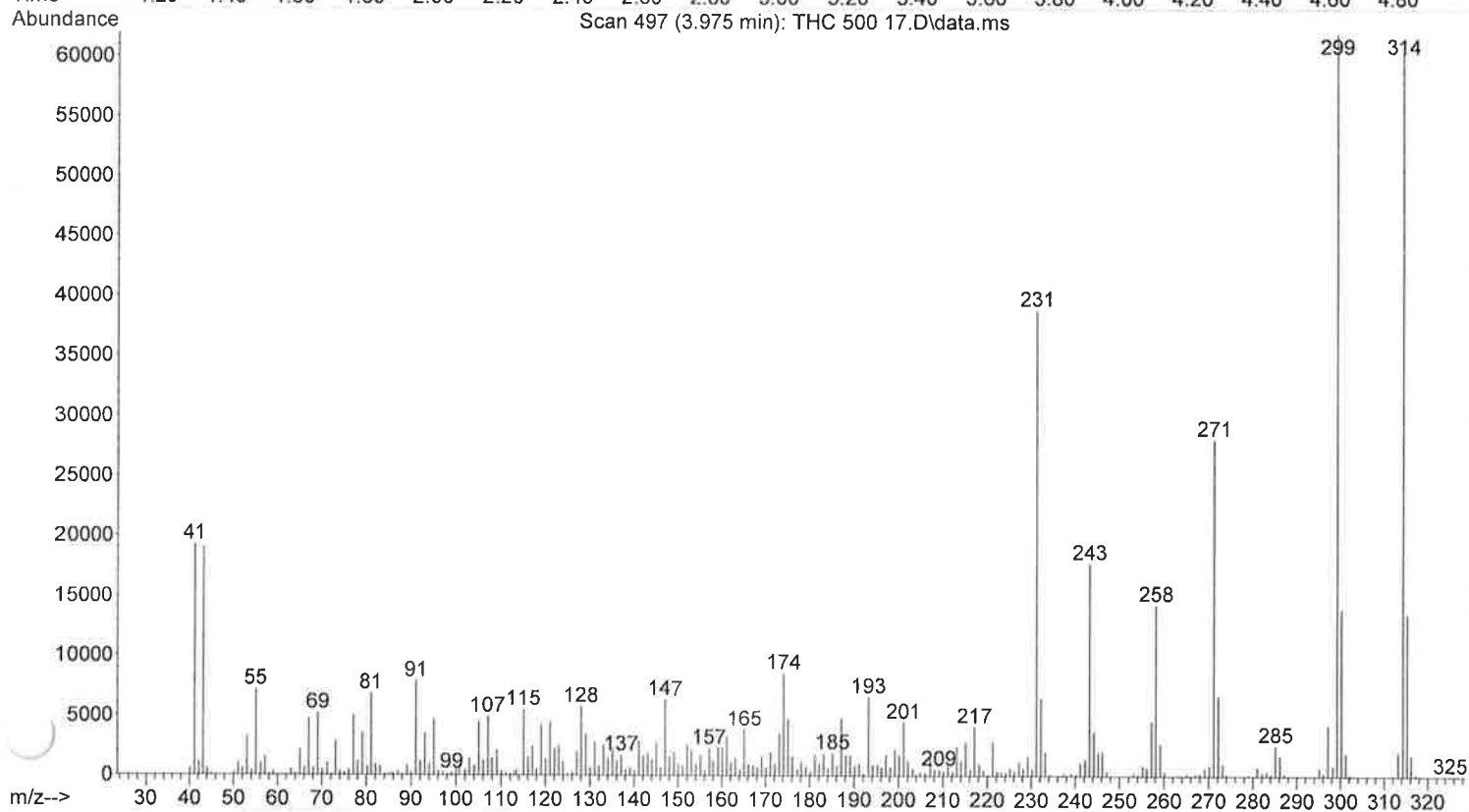
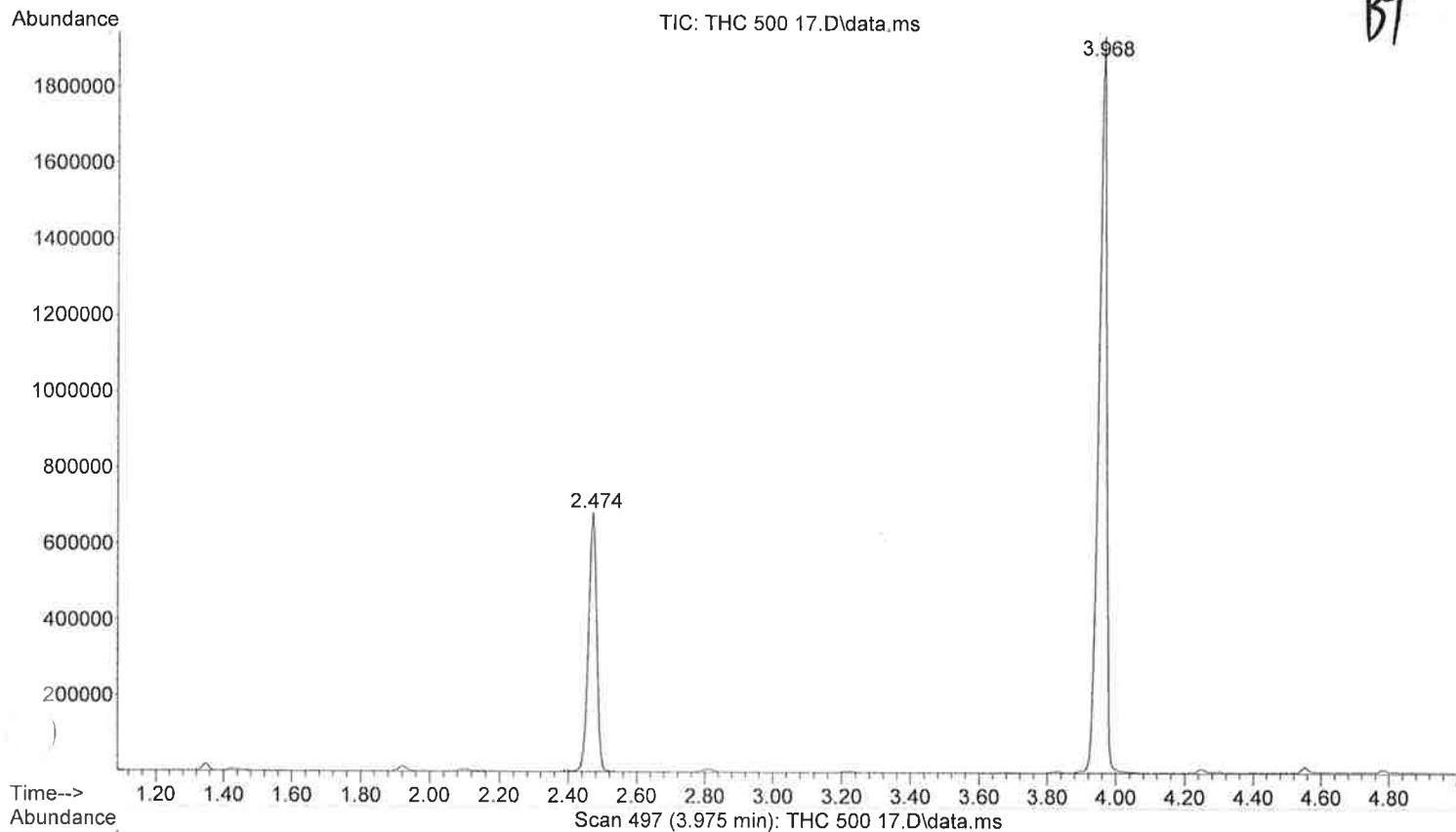
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.475	221	239	253	BB	672977	11565496	34.80%	25.816%
2	3.969	480	496	518	VB	2150728	33234968	100.00%	74.184%

Sum of corrected areas: 44800464

MSDRUGS100.M Tue Aug 13 10:51:25 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 17.D
Operator : BTT
Acquired : 13 Aug 2019 8:47 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 17.D
Acq On : 13 Aug 2019 8:47
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 17.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.474	222	239	253	BB	670501	11329027	37.64%	27.346%
2	3.968	480	496	523	BB	1861259	30099211	100.00%	72.654%

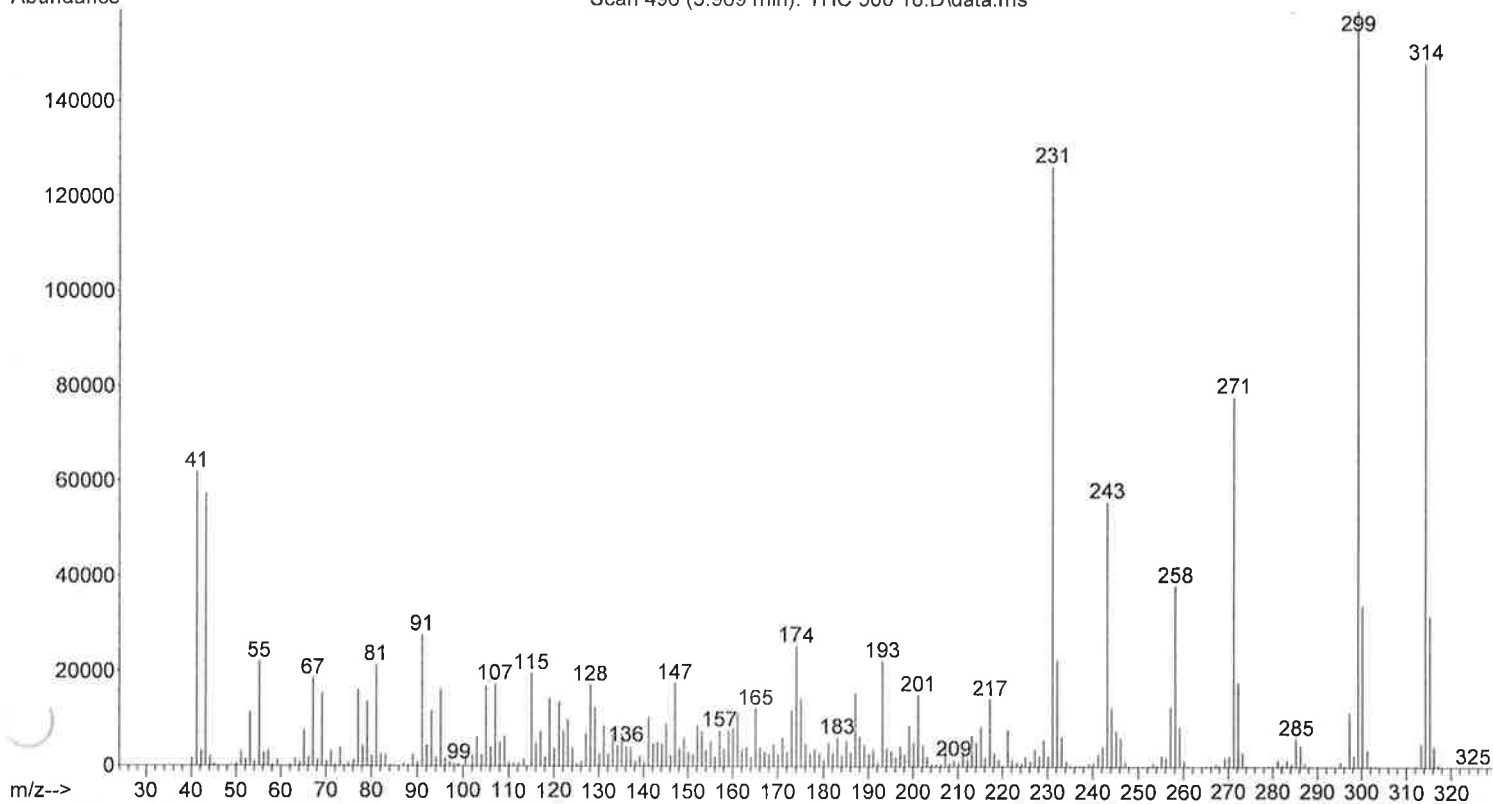
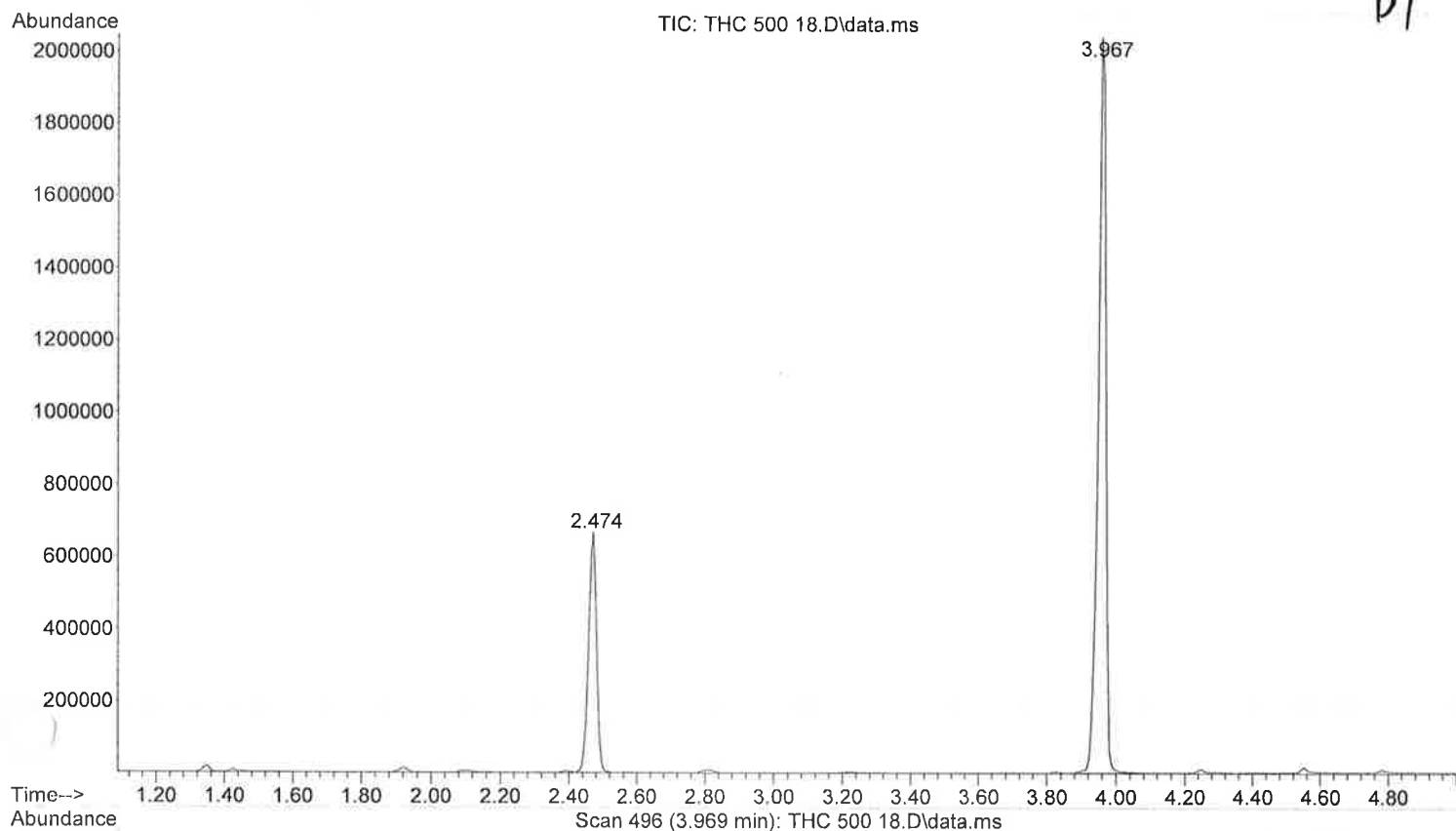
Sum of corrected areas: 41428239

MSDRUGS100.M Tue Aug 13 10:51:52 2019

8/13/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 18.D
Operator : BTT
Acquired : 13 Aug 2019 9:11 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 18.D
Acq On : 13 Aug 2019 9:11
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 18.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.474	230	239	255	VB	654421	10851887	35.09%	25.973%
2	3.967	480	496	518	BB	2036046	30929275	100.00%	74.027%

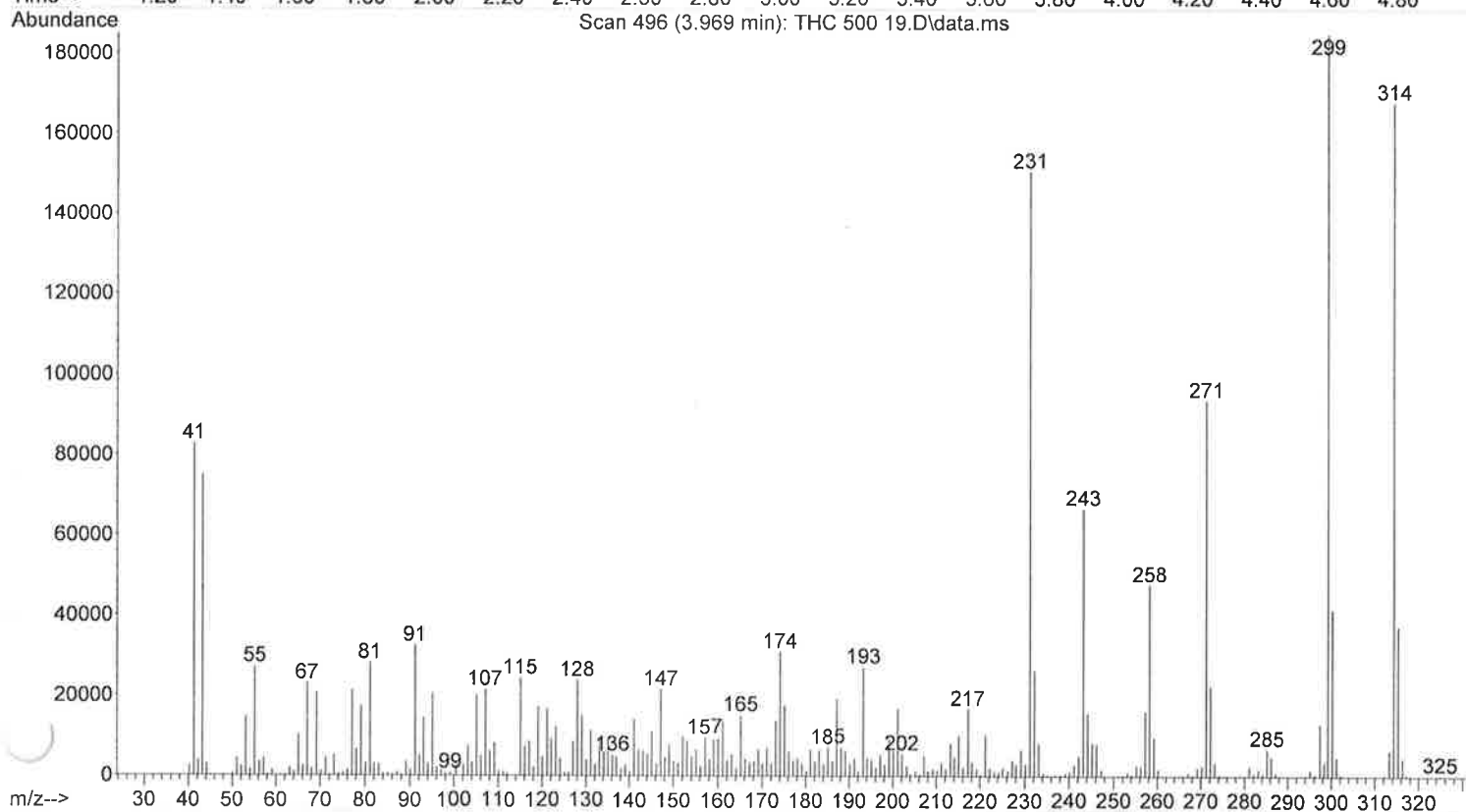
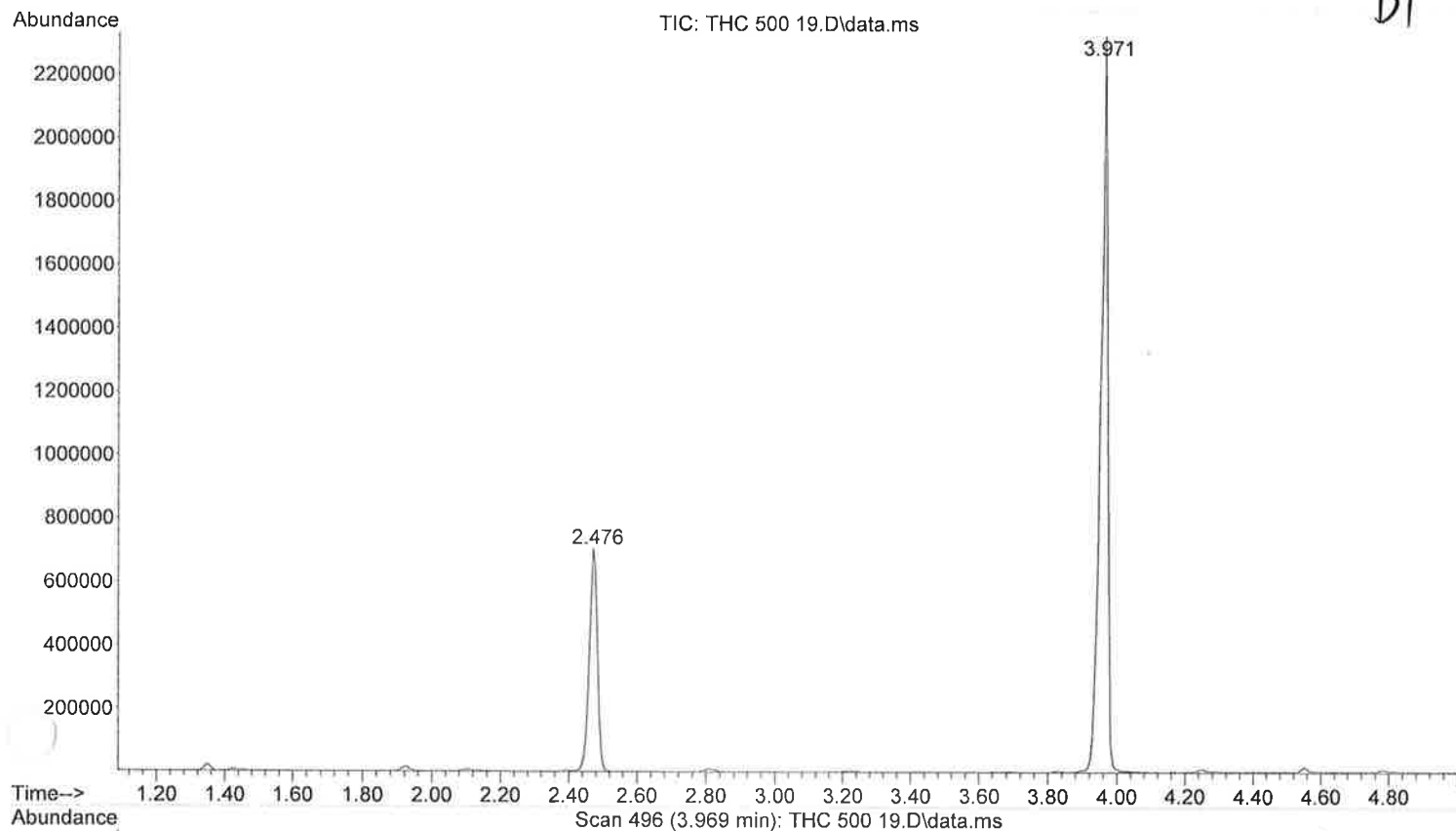
Sum of corrected areas: 41781162

MSDRUGS100.M Tue Aug 13 10:52:16 2019

8/13/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 19.D
Operator : BTT
Acquired : 13 Aug 2019 9:35 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 19.D
Acq On : 13 Aug 2019 9:35
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 19.D\data.ms

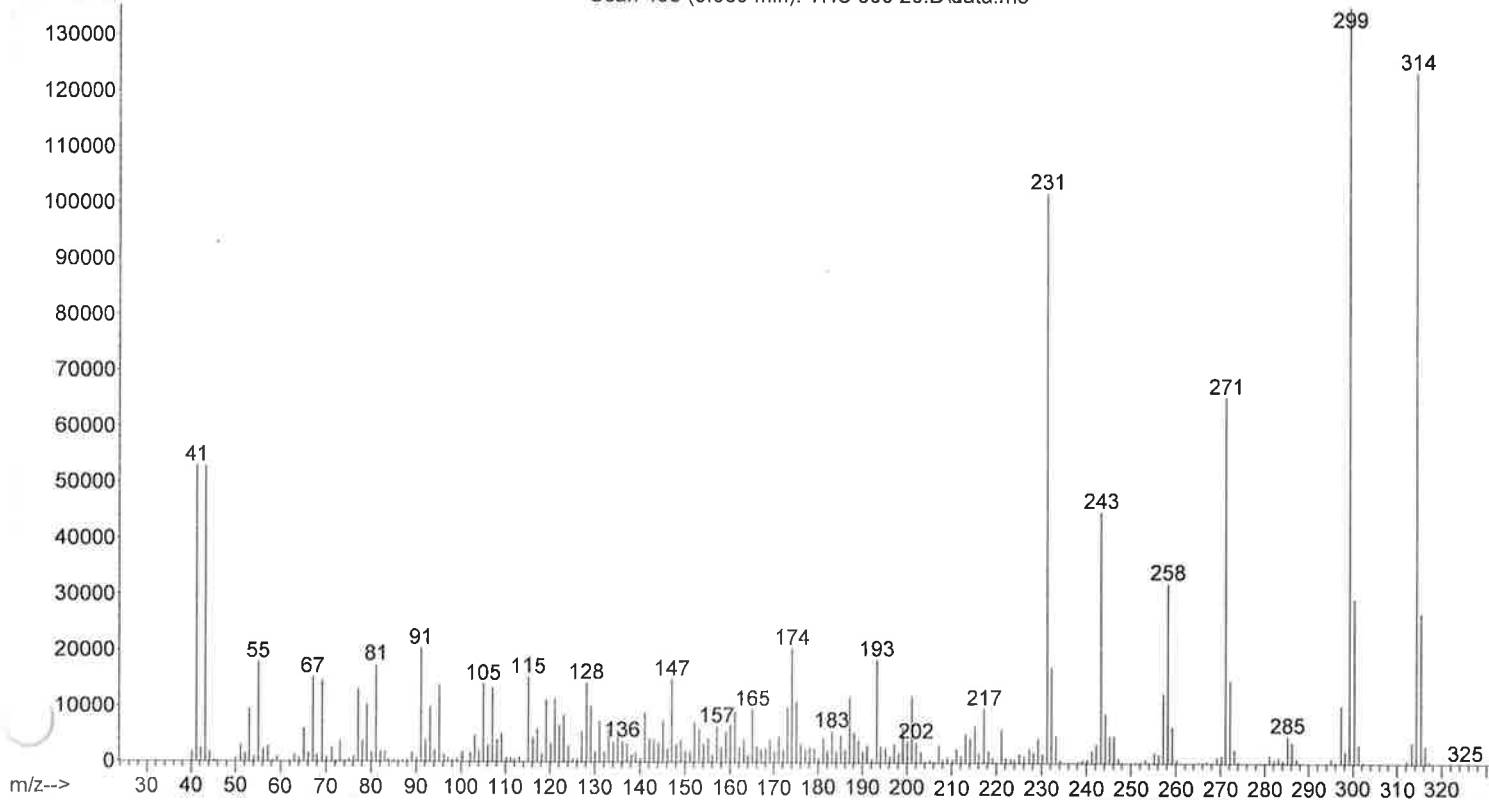
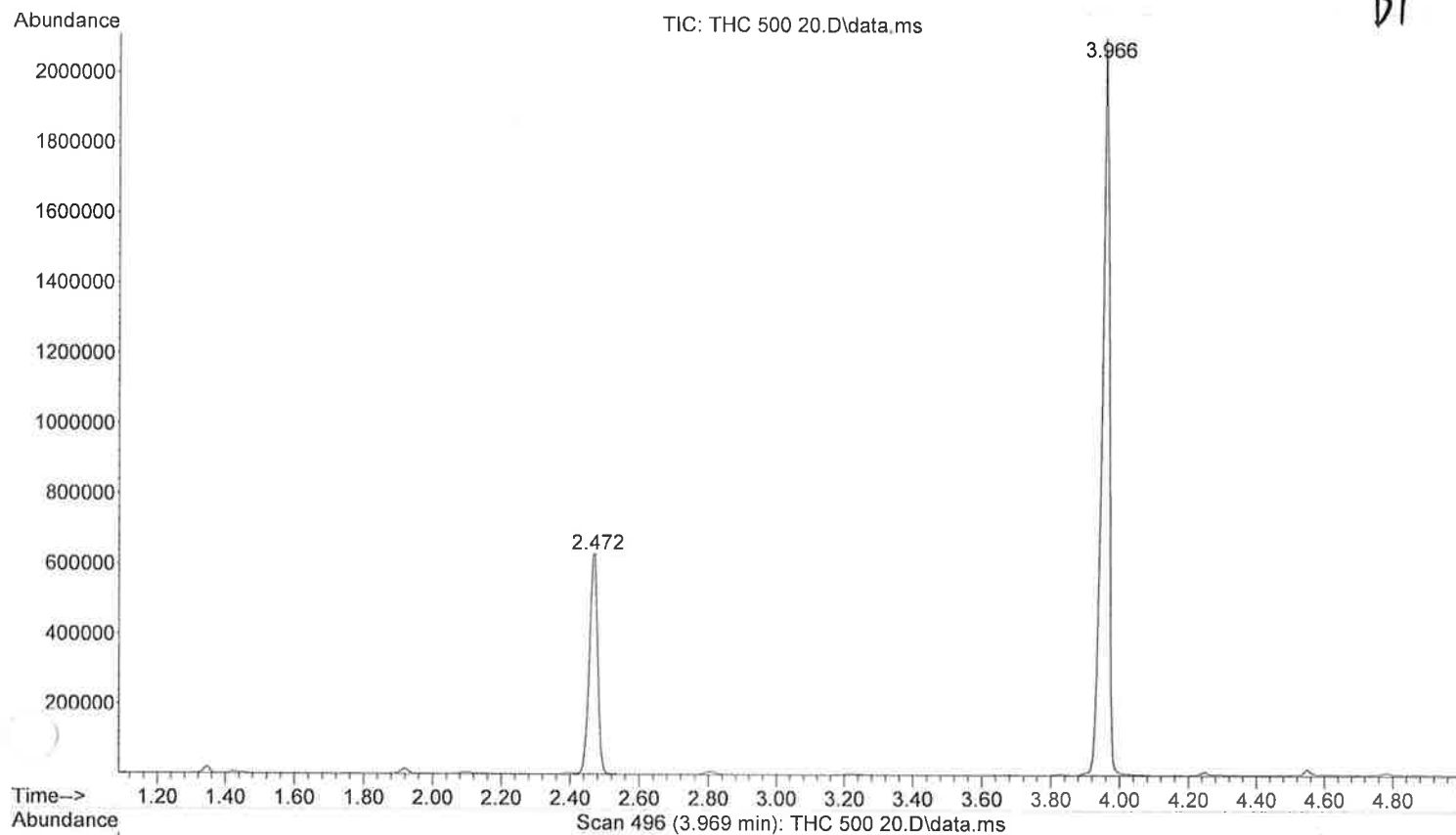
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.476	229	240	253	VB	688902	11638857	35.96%	26.451%
2	3.971	479	496	525	BB	2136838	32362842	100.00%	73.549%

Sum of corrected areas: 44001699

MSDRUGS100.M Tue Aug 13 10:52:47 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-12-19\THC 500 20.D
Operator : BTT
Acquired : 13 Aug 2019 9:58 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-12-19\
Data File : THC 500 20.D
Acq On : 13 Aug 2019 9:58
Operator : BTT
Sample : Standard
IC : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 20.D\data.ms

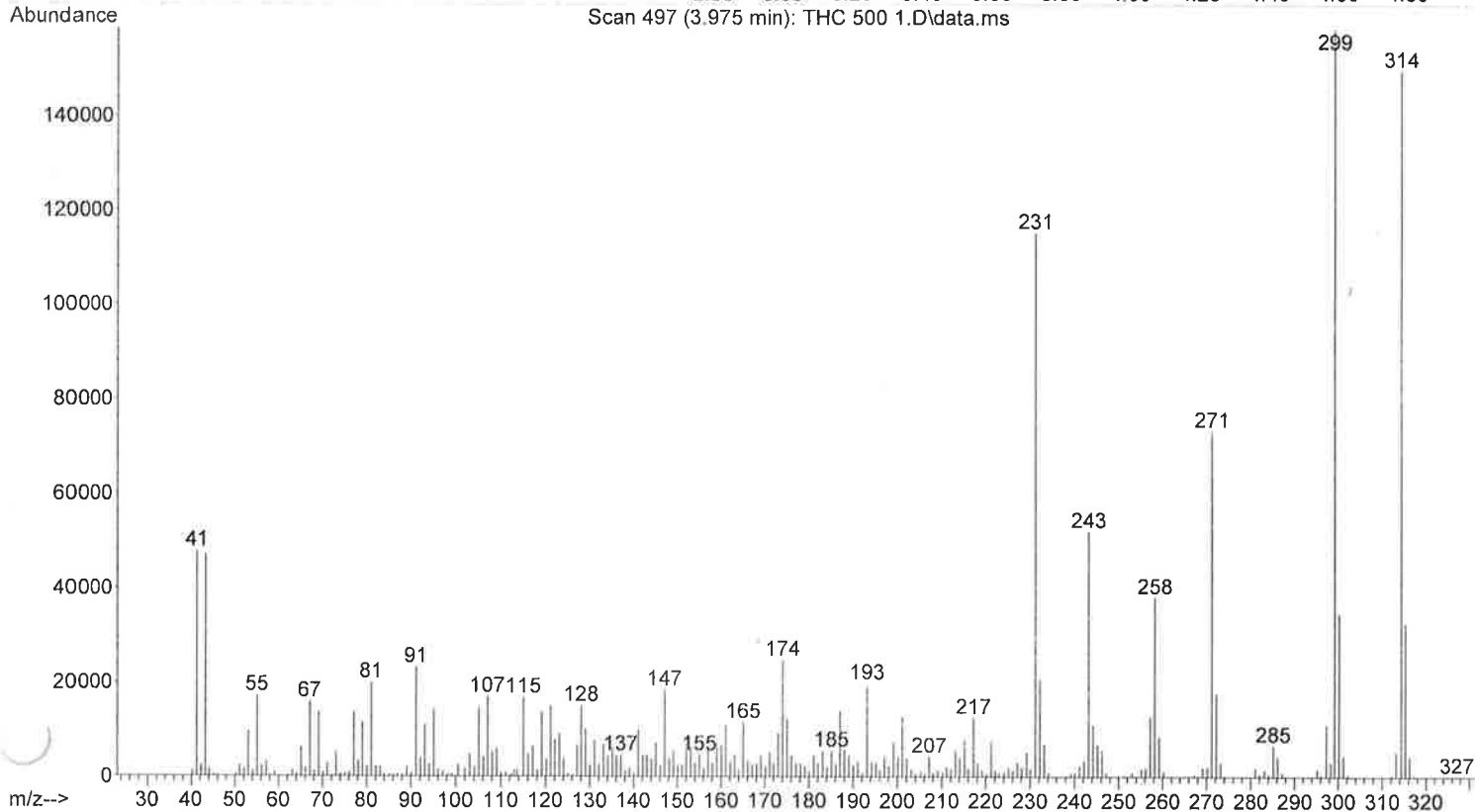
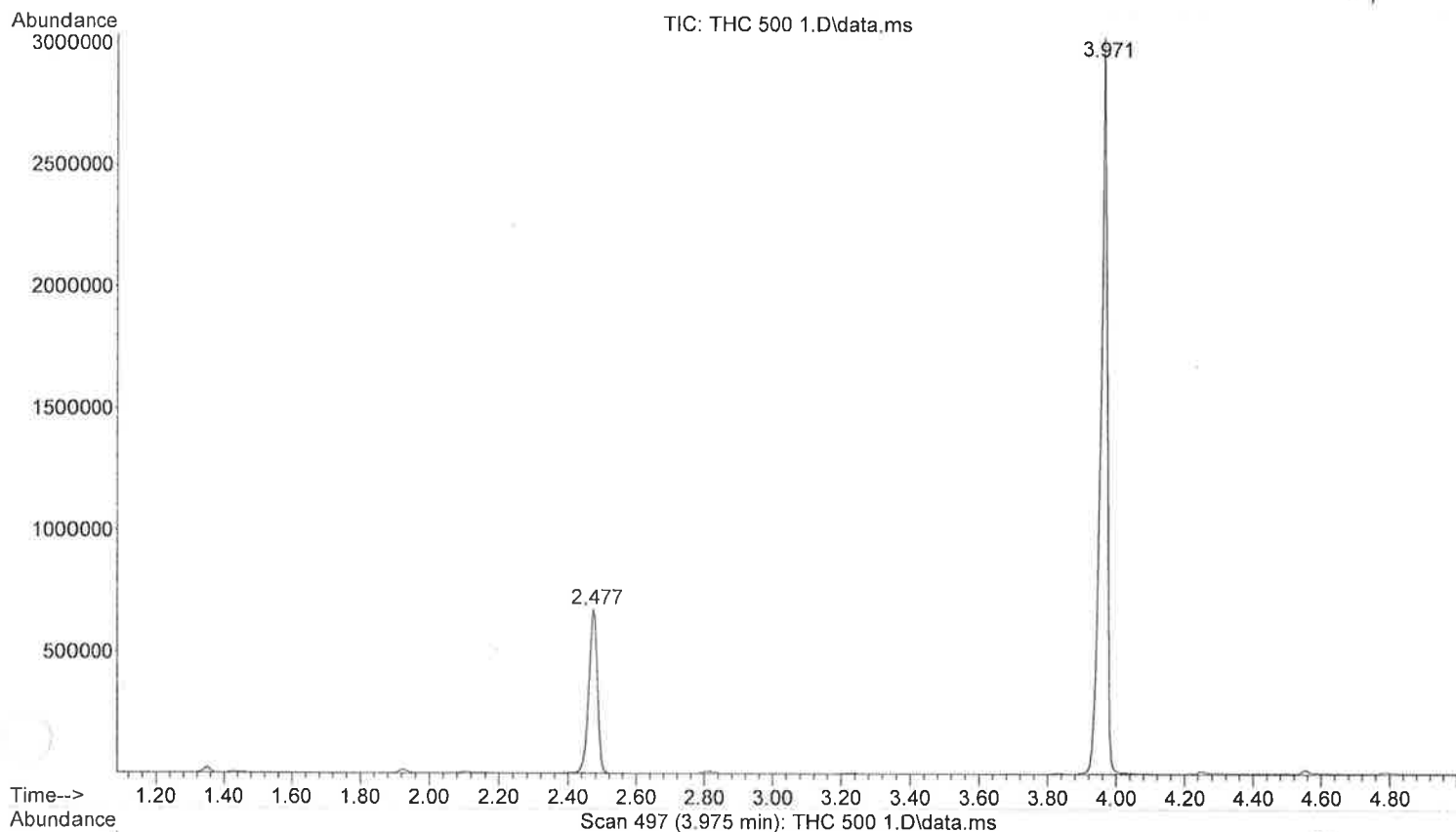
peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.472	229	239	256	VB	638683	10580291	34.63%	25.722%
2	3.966	479	495	518	BB	1968149	30552539	100.00%	74.278%

Sum of corrected areas: 41132830

MSDRUGS100.M Tue Aug 13 10:53:26 2019

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\THC 500 1.D
Operator : BTT
Acquired : 13 Aug 2019 11:01 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Mi nfo : Methanol
Via. number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : THC 500 1.D
Acq On : 13 Aug 2019 11:01
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.477	229	240	252	BB	668526	11564975	29.48%	22.767%
2	3.971	480	496	512	BB	2813977	39231230	100.00%	77.233%

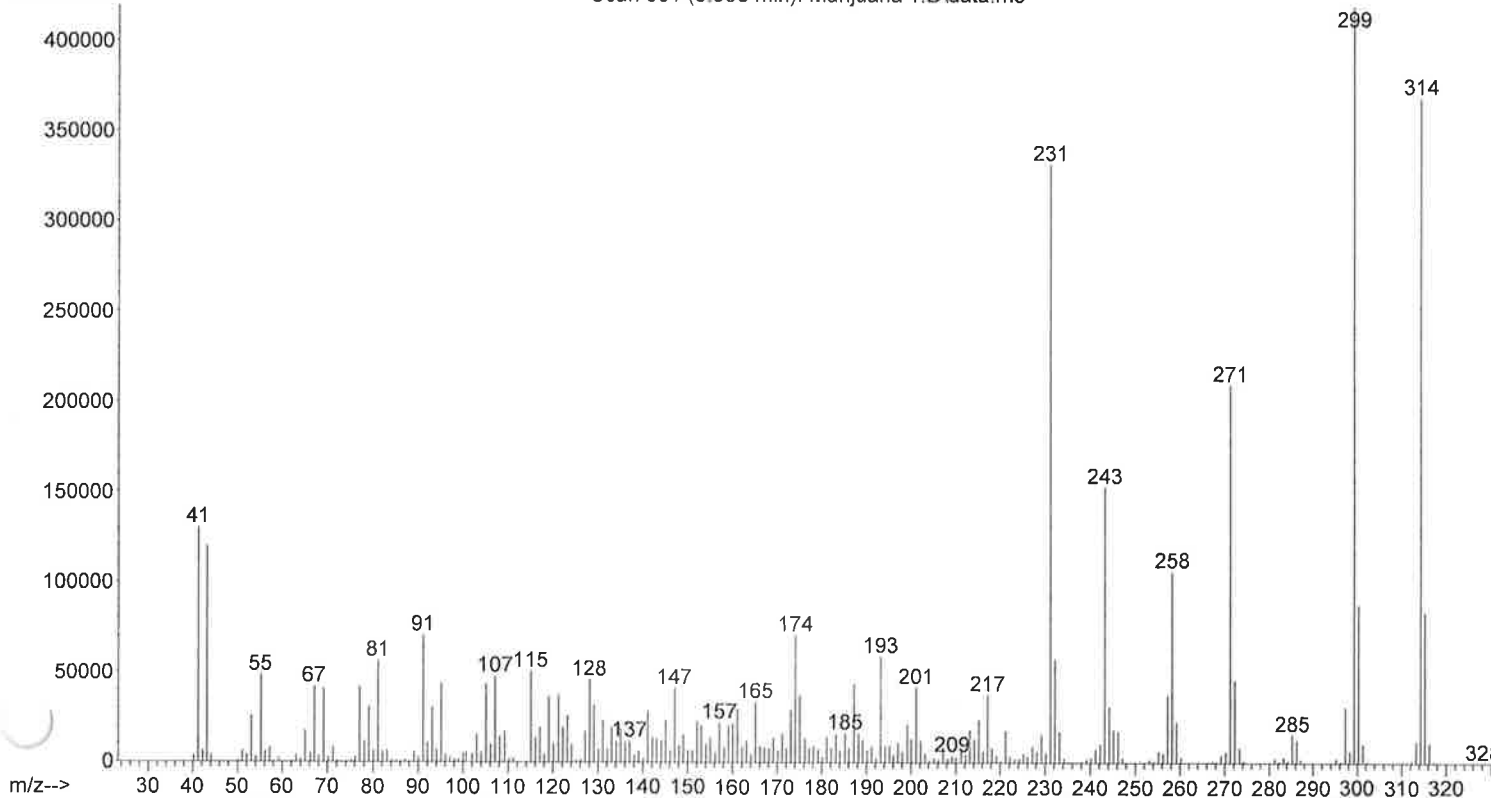
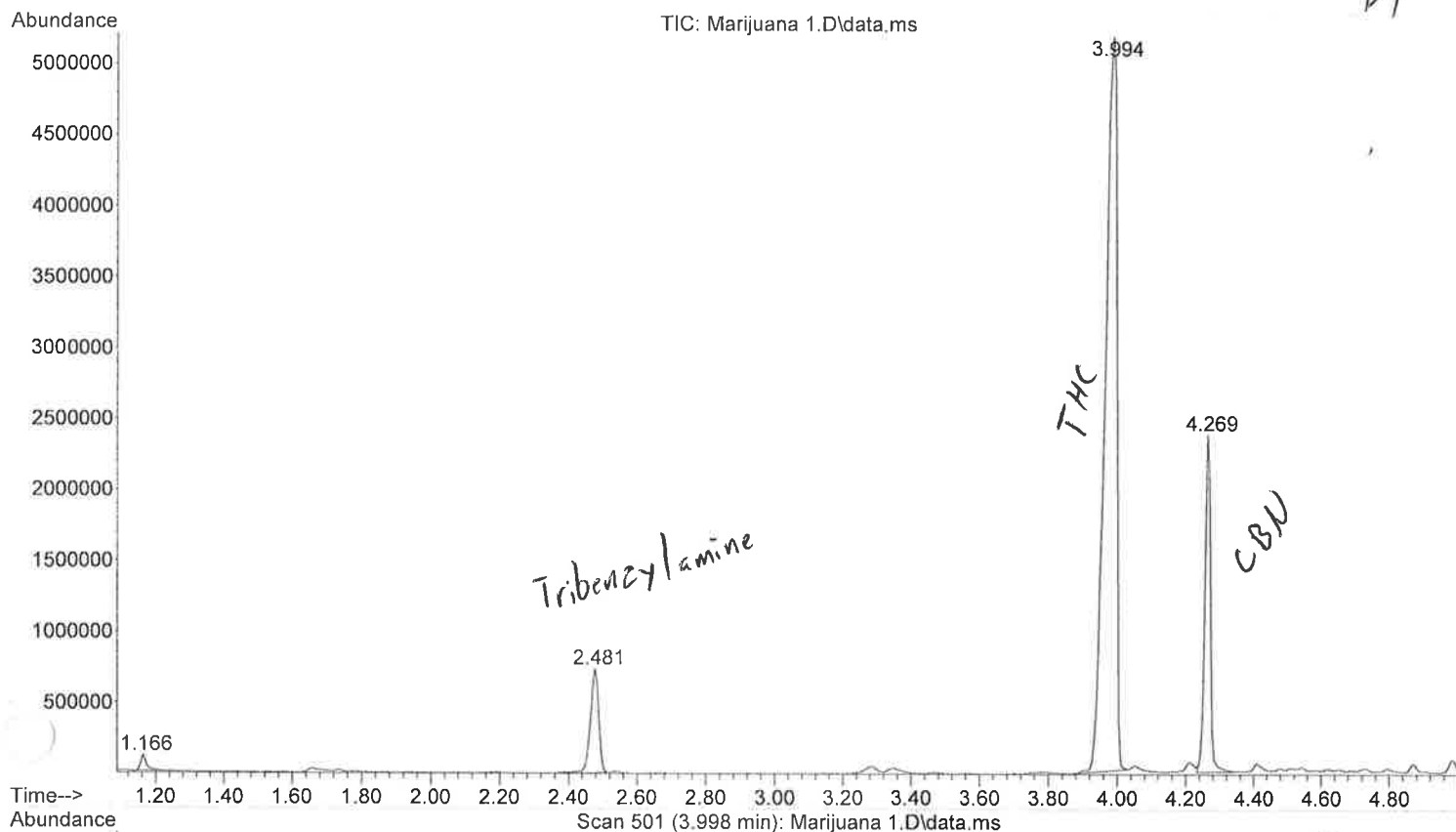
Sum of corrected areas: 50796206

MSDRUGS100.M Tue Aug 13 12:30:59 2019

$$\frac{39231230}{11564975} = 3.392$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 1.D
Operator : BTT
Acquired : 13 Aug 2019 11:24 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 28

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 1.D
Acq On : 13 Aug 2019 11:24
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 28 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.166	10	15	29	BB	105327	1405753	1.16%	0.864%
2	2.481	221	240	247	BV	711618	12327422	10.17%	7.576%
3	3.994	479	500	507	BV 2	5120000	121200128	100.00%	74.483%
4	4.269	541	548	564	VV	2310518	27787814	22.93%	17.077%

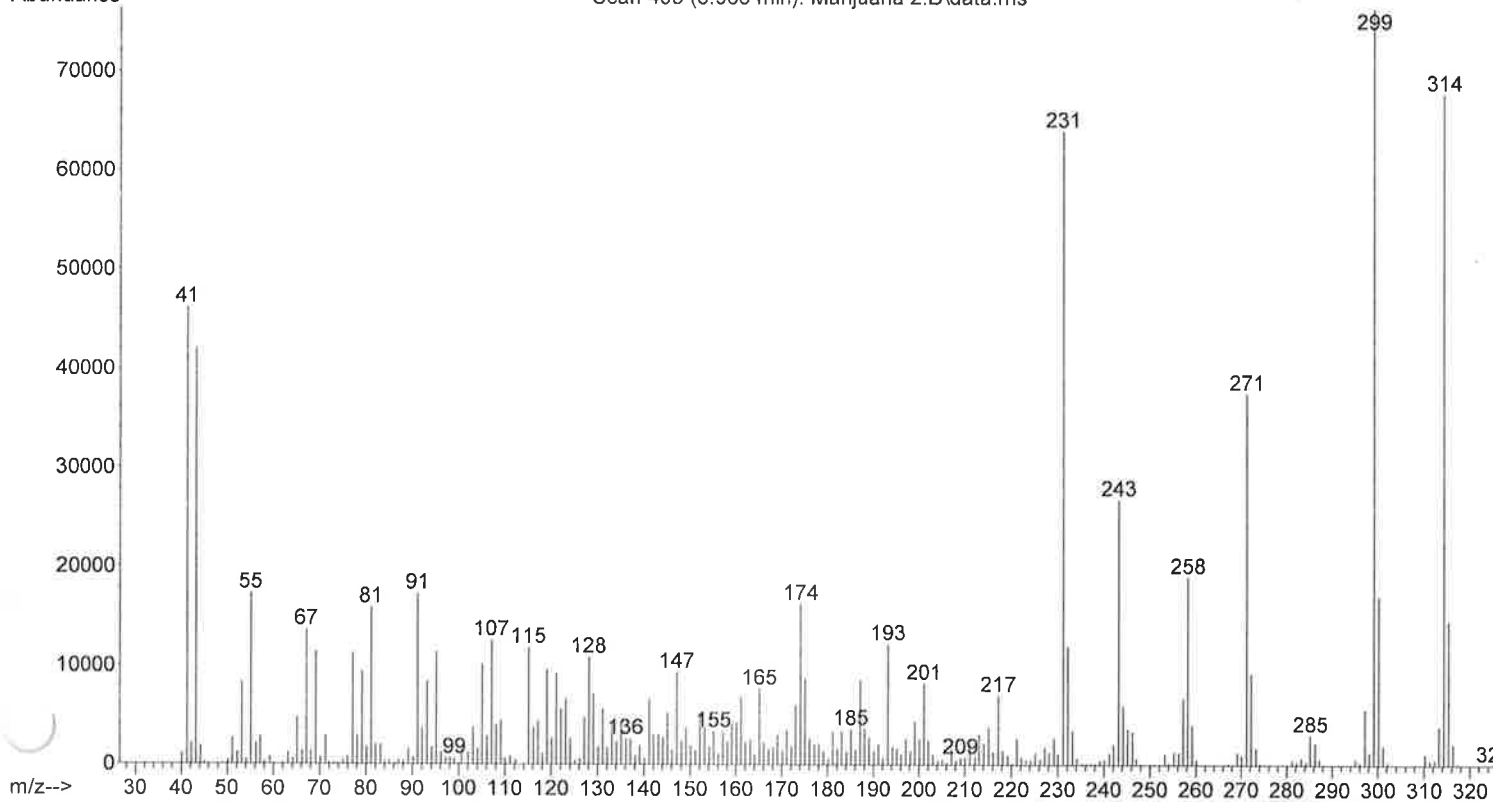
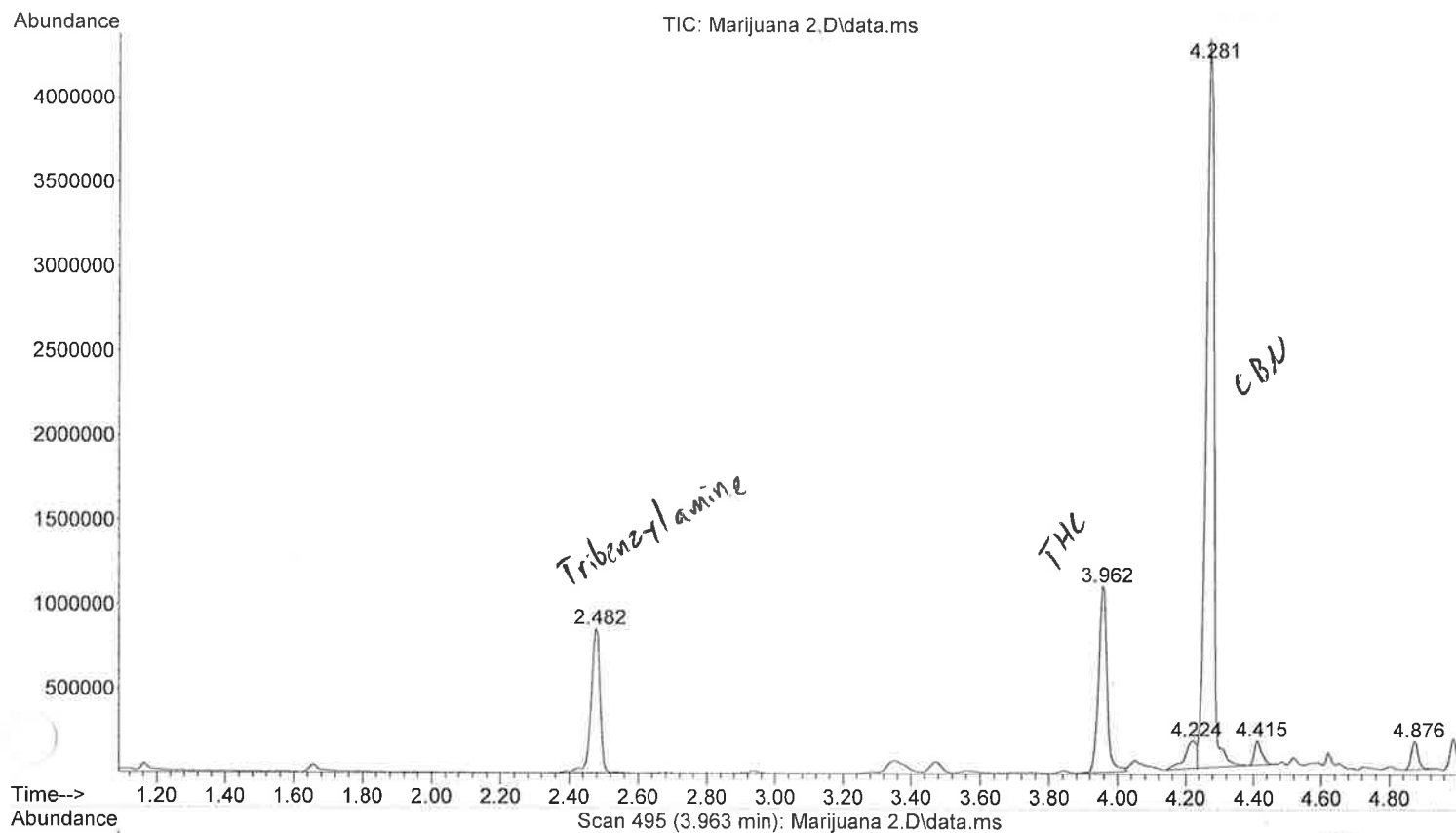
Sum of corrected areas: 162721116

MSDRUGS100.M Tue Aug 13 12:27:05 2019

$$\frac{121,200,128}{12,327,422} = 9.832$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 2.D
Operator : BTT
Acquired : 13 Aug 2019 11:48 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 29

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 2.D
Acq On : 13 Aug 2019 11:48
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 29 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.482	220	241	257	BB	855286	15410651	21.84%	13.697%
2	3.962	481	495	506	PV	1107742	18474823	26.18%	16.421%
3	4.224	526	540	541	PV 4	162467	3604642	5.11%	3.204%
4	4.281	541	549	568	VV	4229866	70575091	100.00%	62.728%
5	4.415	568	573	582	VV 2	140024	2116110	3.00%	1.881%
6	4.876	647	652	661	BB	163338	2328029	3.30%	2.069%

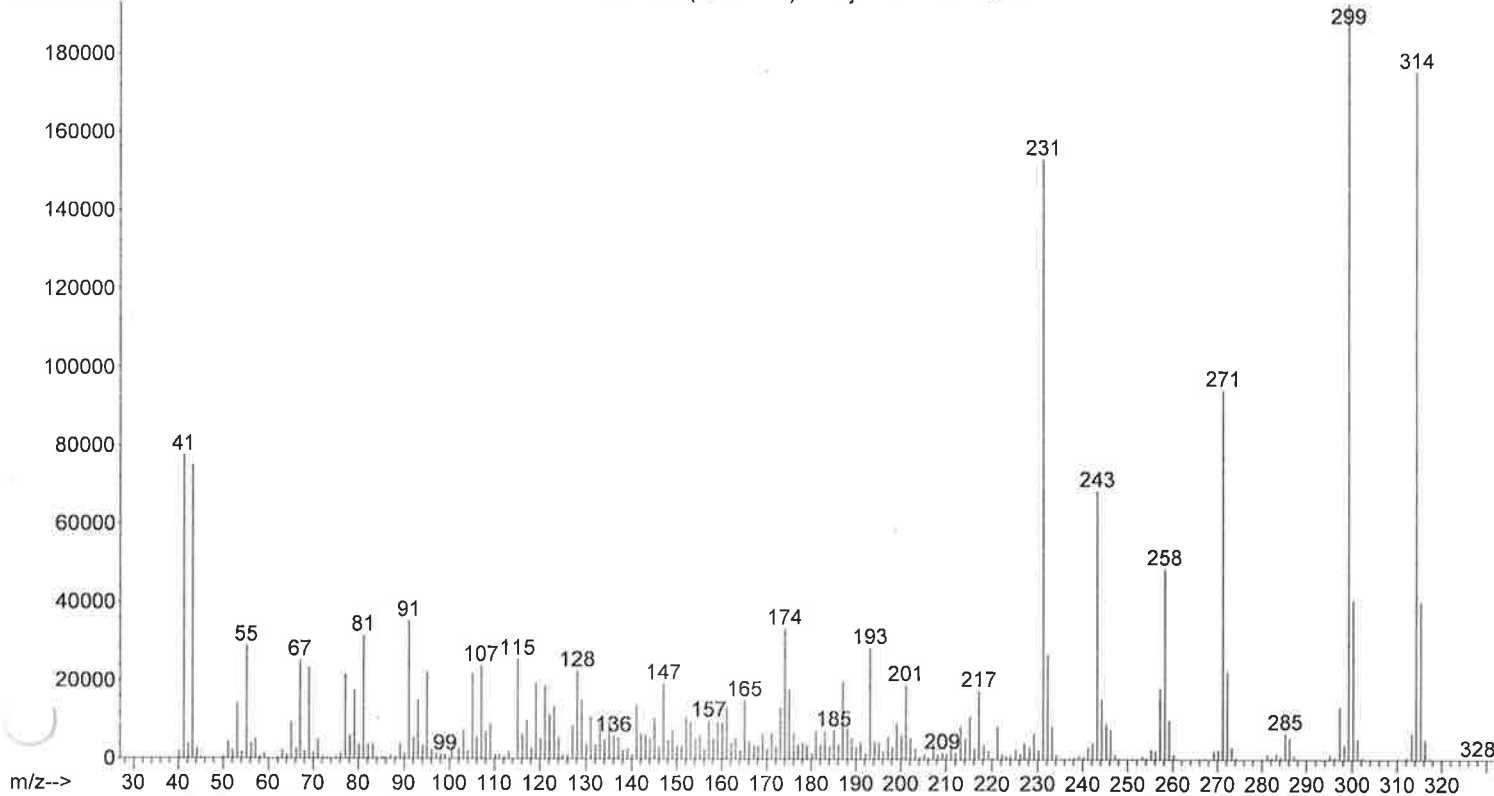
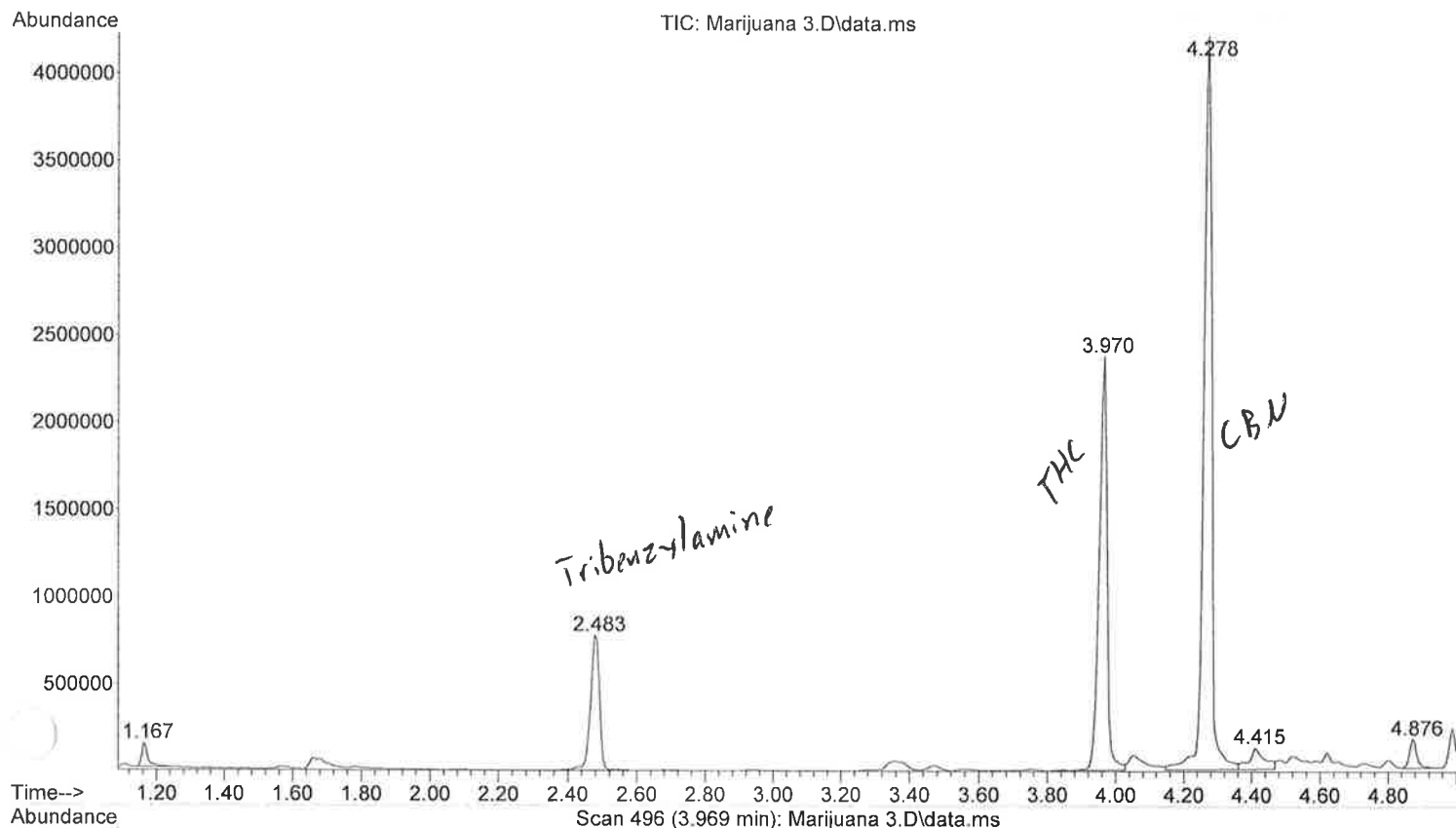
Sum of corrected areas: 112509346

MSDRUGS100.M Tue Aug 13 12:28:14 2019

$$\frac{18,474,823}{15,410,651} = 1.199$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 3.D
Operator : BTT
Acquired : 13 Aug 2019 12:11 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 30

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 3.D
Acq On : 13 Aug 2019 12:11
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 30 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 3.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.167	10	15	28	BB	134085	1773712	2.51%	1.361%
2	2.483	223	241	255	BB	767740	13539876	19.13%	10.388%
3	3.970	469	496	506	BV	2252091	37920684	53.58%	29.092%
4	4.278	527	549	563	VV	4154486	70767415	100.00%	54.292%
5	4.415	563	573	582	VV 3	118905	3876553	5.48%	2.974%
6	4.876	646	652	665	VB	165547	2468107	3.49%	1.893%

Sum of corrected areas: 130346347

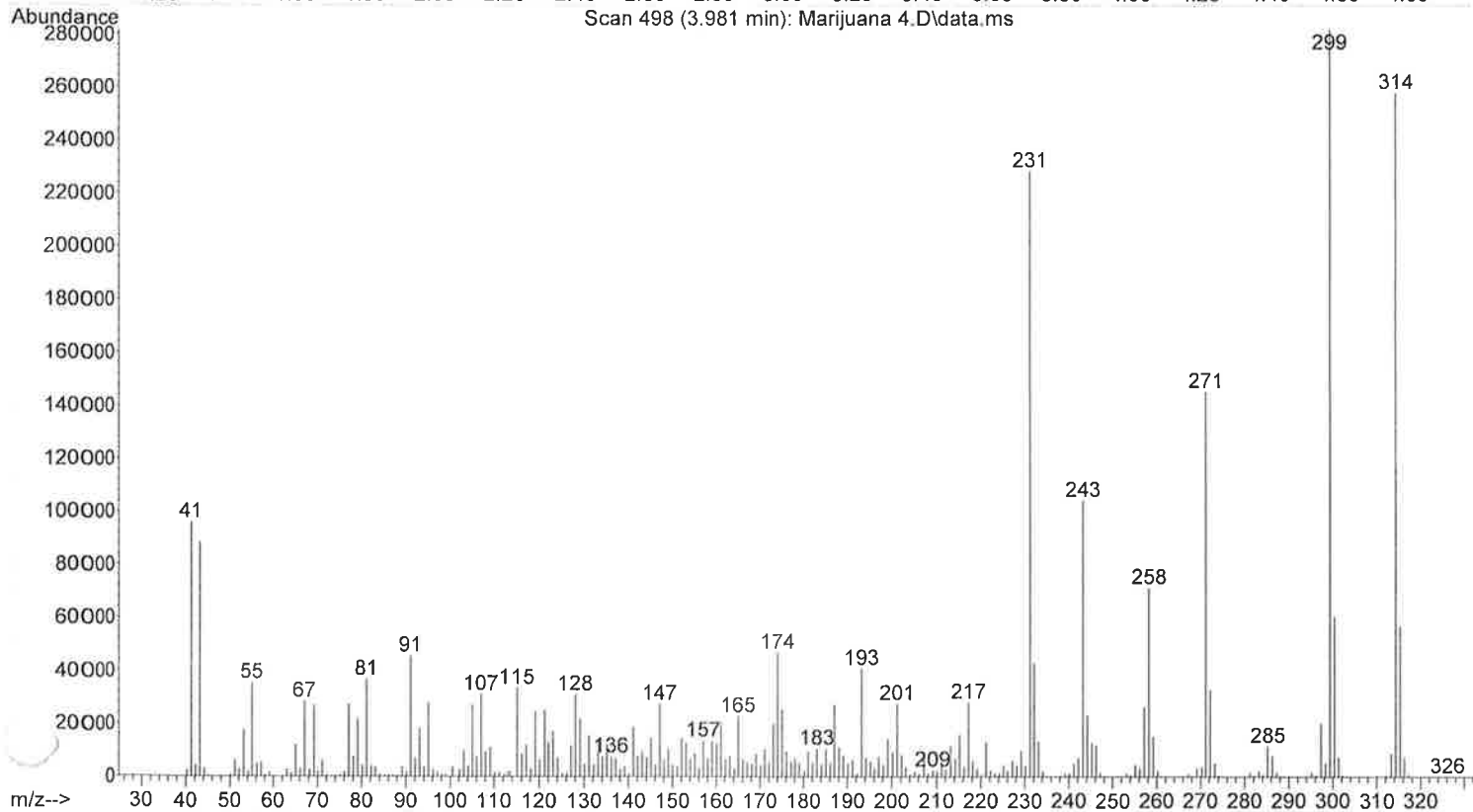
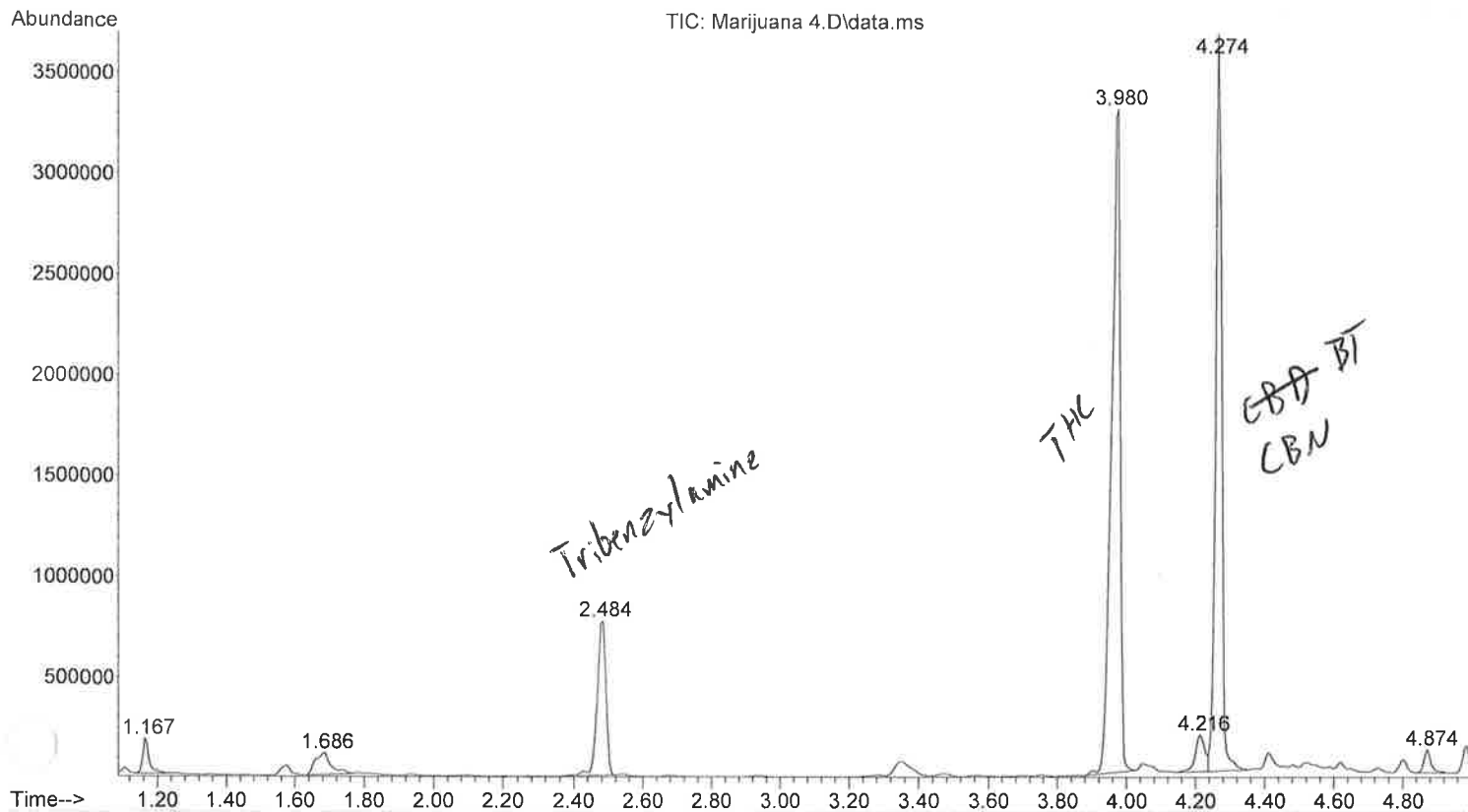
MSDRUGS100.M Tue Aug 13 12:28:56 2019

$$\frac{37,920,684}{13,539,876} = 2.801$$

8/13/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 4.D
Operator : BTT
Acquired : 13 Aug 2019 12:35 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 31

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 4.D
Acq On : 13 Aug 2019 12:35
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 31 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 4.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.167	9	15	28	BB	169122	2185378	3.83%	1.726%
2	1.686	94	104	118	PV 6	109507	3402640	5.96%	2.688%
3	2.484	221	241	247	BV	767960	13322708	23.34%	10.525%
4	3.980	479	498	506	BV	3269993	57076422	100.00%	45.090%
5	4.216	527	538	542	BV	178697	3355291	5.88%	2.651%
6	4.274	542	548	563	VV	3549720	45610111	79.91%	36.032%
7	4.874	646	651	665	PB	110733	1630484	2.86%	1.288%

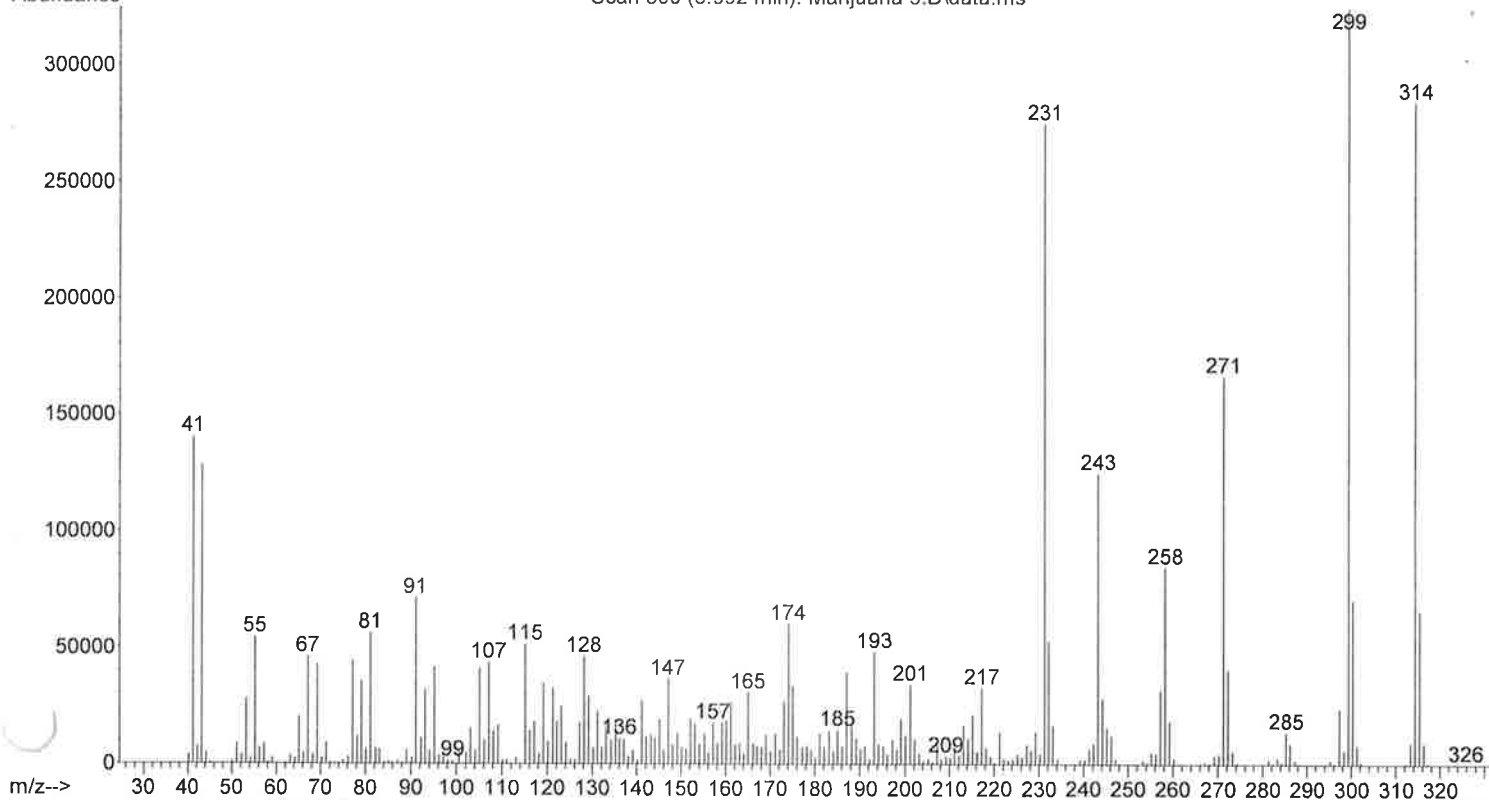
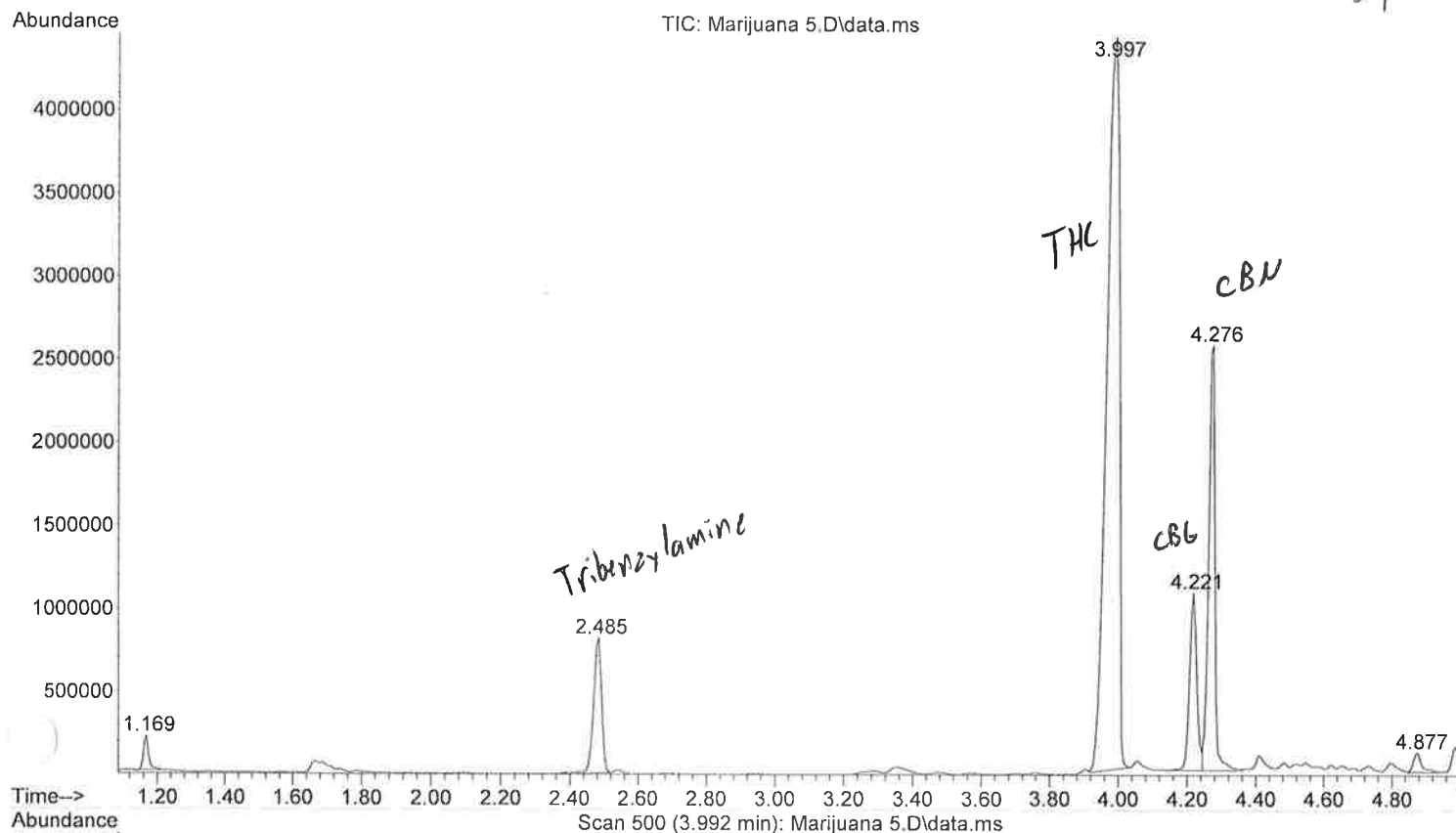
Sum of corrected areas: 126583034

MSDRUGS100.M Tue Aug 13 13:10:42 2019

$$\frac{57,076,422}{13,322,708} = 4.284$$

File : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 5.D
Operator : BTT
Acquired : 13 Aug 2019 12:58 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 32

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 5.D
Acq On : 13 Aug 2019 12:58
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 32 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 5.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.169	3	15	27	BB	200071	2133088	1.90%	1.200%
2	2.485	221	241	248	BV	793207	13309144	11.86%	7.486%
3	3.997	487	501	508	VV 3	4359274	112254368	100.00%	63.137%
4	4.221	524	539	543	BV	1035448	15144399	13.49%	8.518%
5	4.276	543	549	563	VV	2674431	33007779	29.40%	18.565%
6	4.877	647	652	666	VV 2	113594	1946846	1.73%	1.095%

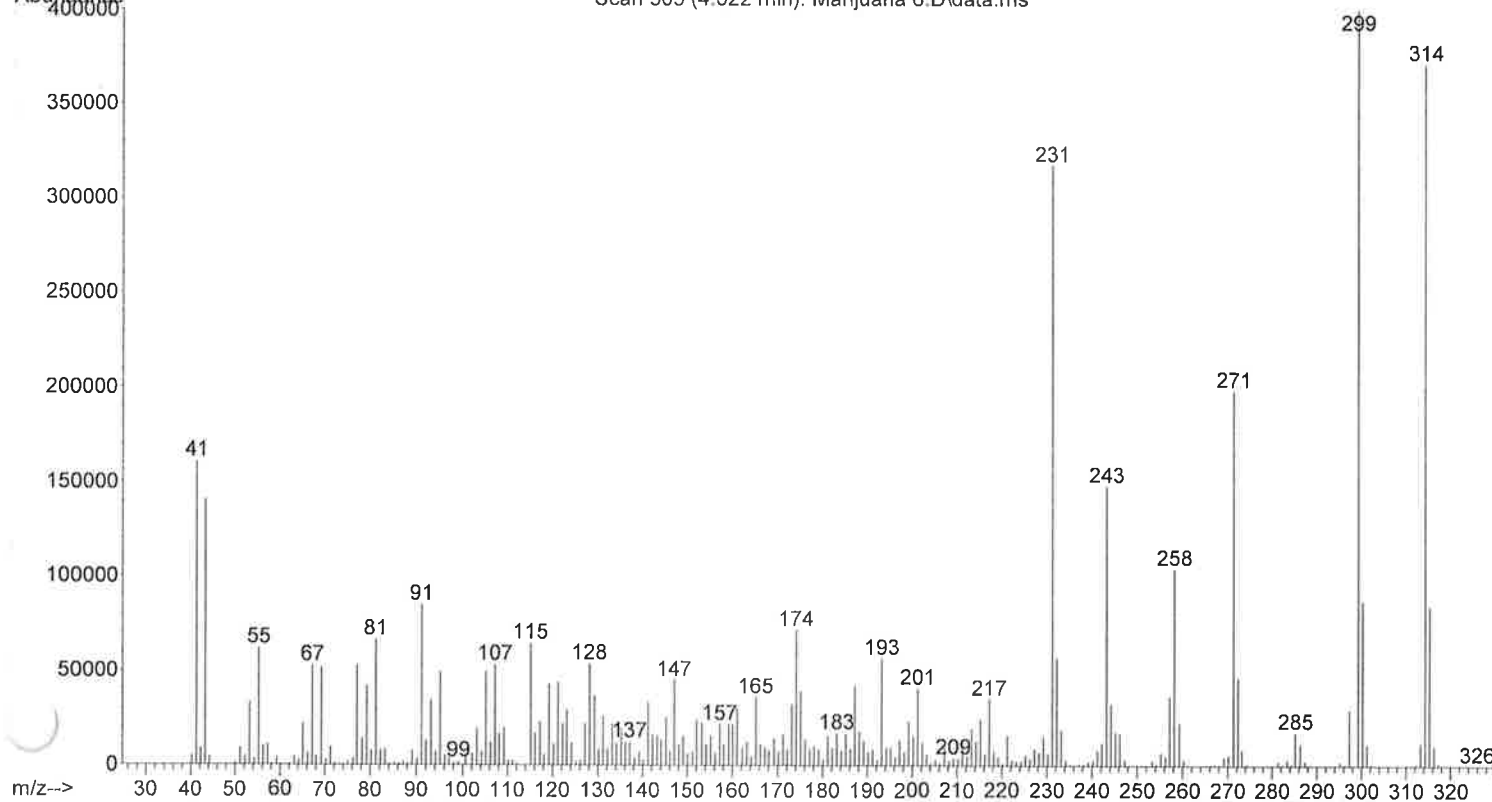
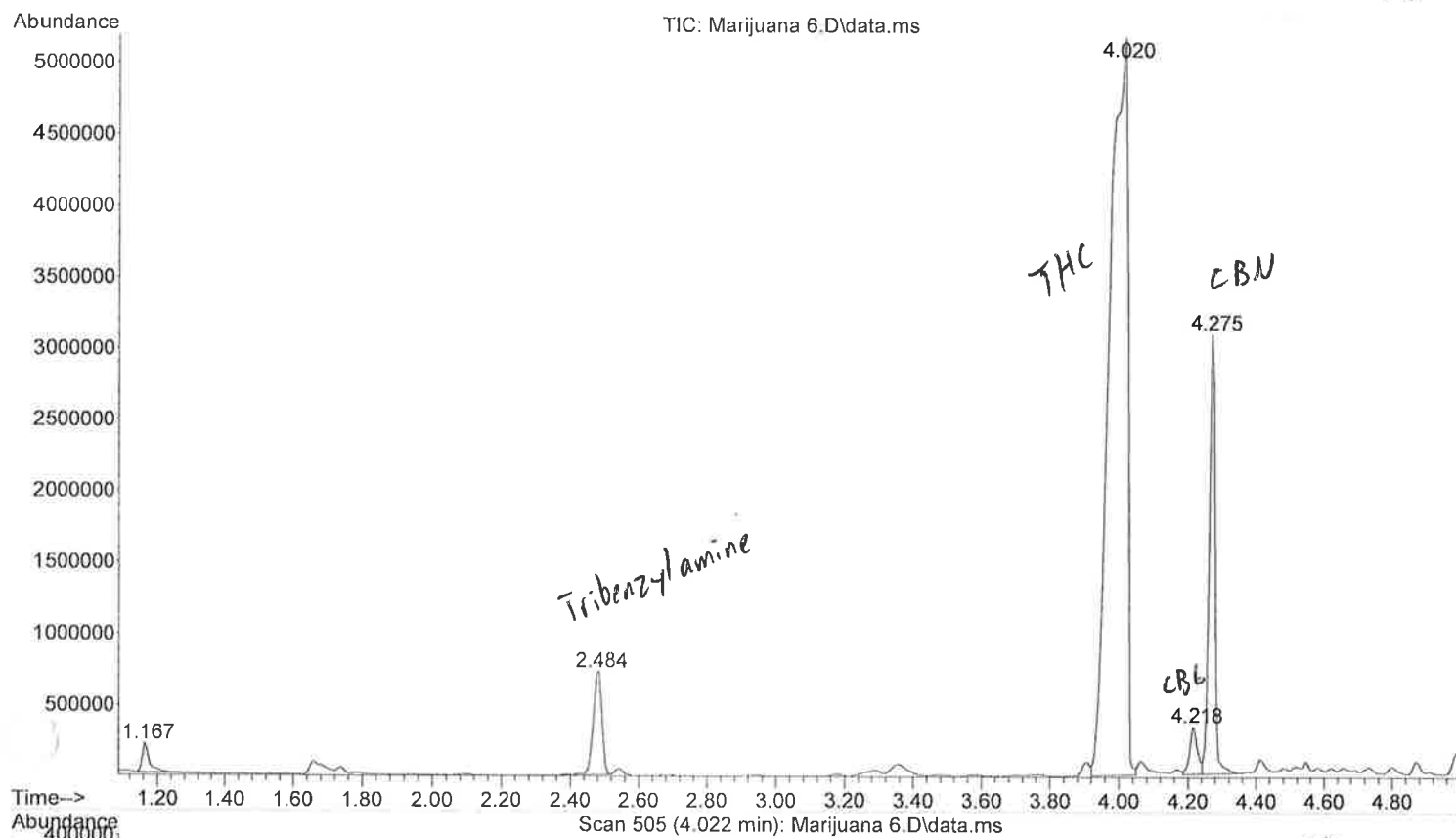
Sum of corrected areas: 177795623

MSDRUGS100.M Tue Aug 13 13:11:56 2019

$$\frac{112254368}{13309144} = 8.434$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 6.D
Operator : BTT
Acquired : 13 Aug 2019 13:22 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 33

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 6.D
Acq On : 13 Aug 2019 13:22
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 33 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 6.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.167	10	15	28	BB	197332	2802384	1.47%	1.125%
2	2.484	220	241	247	BV	721428	12957724	6.80%	5.204%
3	4.020	488	505	510	VV	5127434	190437904	100.00%	76.480%
4	4.218	533	539	543	VV	319253	5052503	2.65%	2.029%
5	4.275	543	549	563	VV	3001219	37753636	19.82%	15.162%

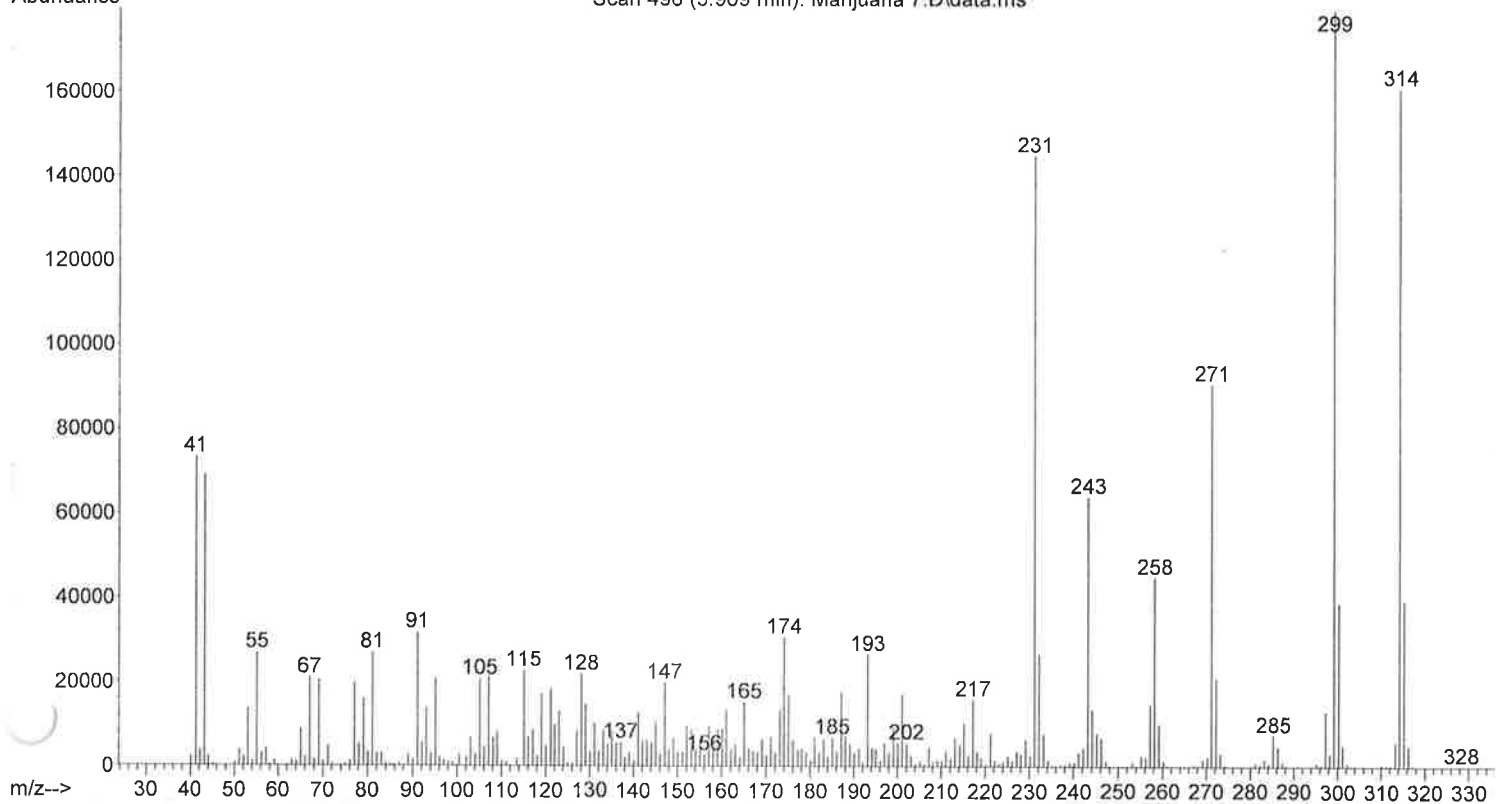
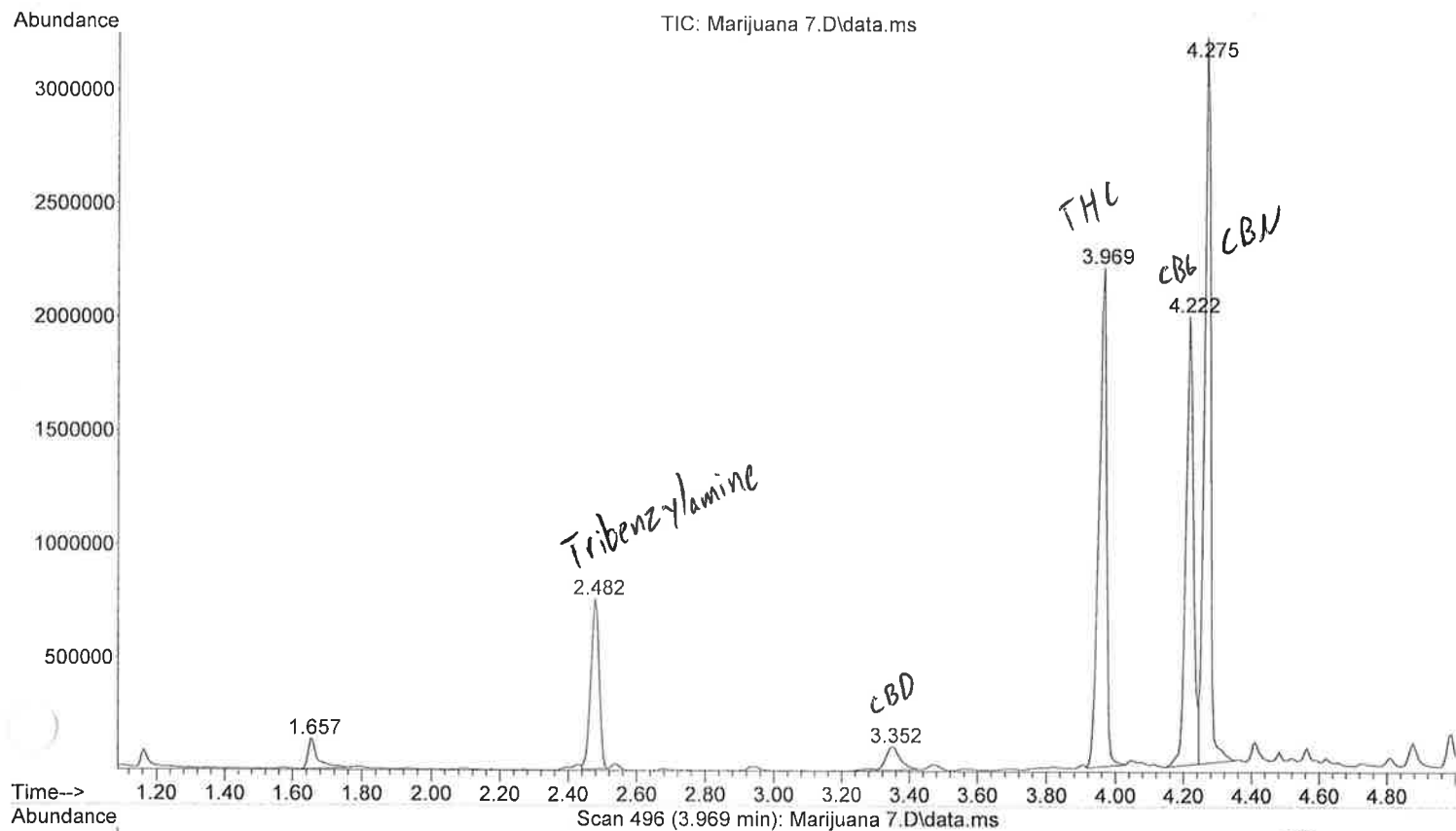
Sum of corrected areas: 249004151

MSDRUGS100.M Tue Aug 13 15:29:36 2019

$$\frac{190,437,904}{12,957,724} = 14.697$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 7.D
Operator : BTT
Acquired : 13 Aug 2019 13:45 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Micro Info : Methanol
Vial number: 34

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 7.D
Acq On : 13 Aug 2019 13:45
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 34 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 7.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.657	93	99	118	BV	133779	2535761	6.03%	2.041%
2	2.482	233	241	247	VV	732225	12788930	30.40%	10.296%
3	3.352	366	390	404	BV 2	102910	3227893	7.67%	2.599%
4	3.969	487	496	506	VV	2100690	33291829	79.13%	26.801%
5	4.222	527	539	543	PV	1895673	30301494	72.02%	24.394%
6	4.275	543	549	562	VV	3107595	42071172	100.00%	33.869%

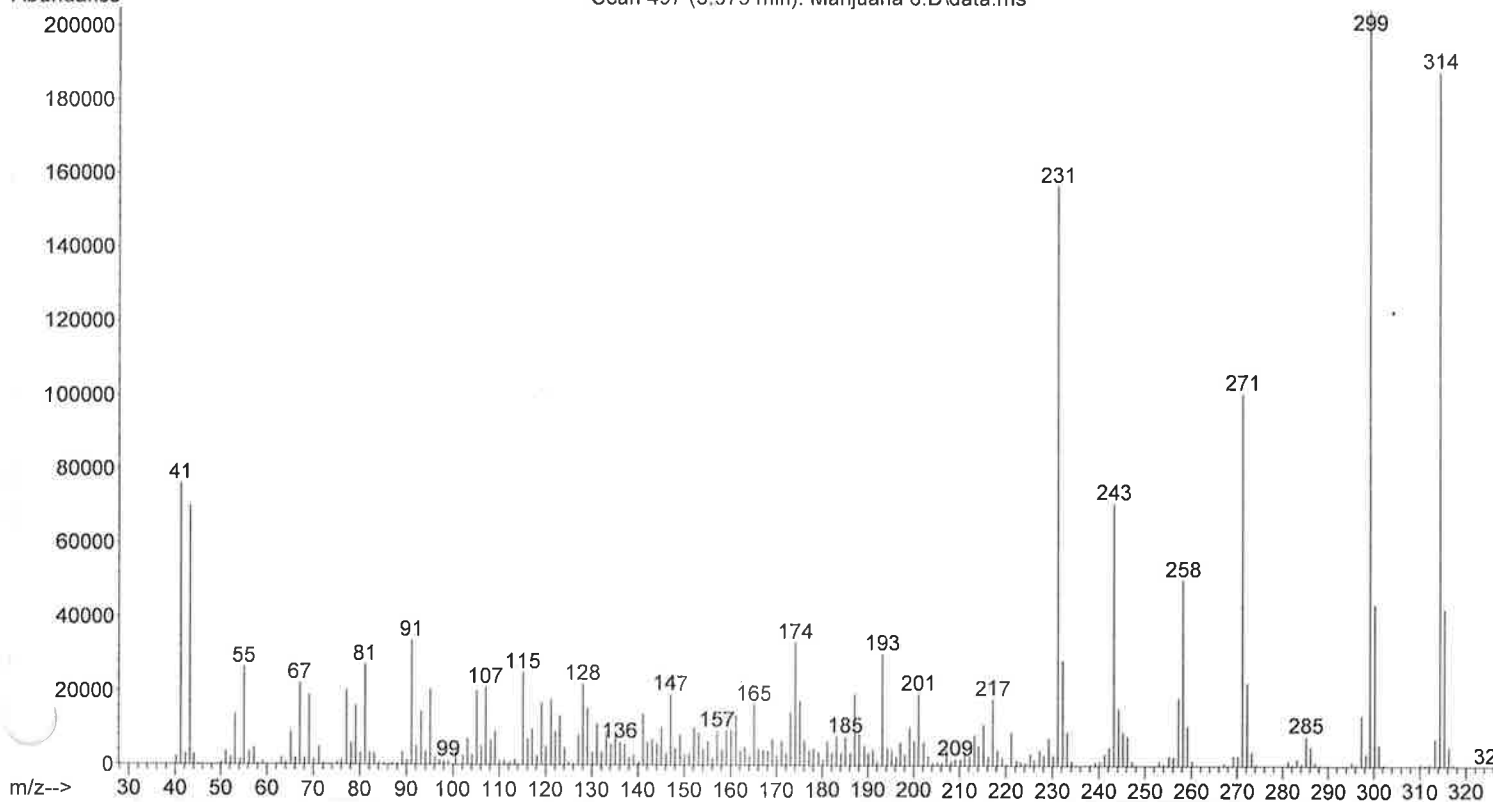
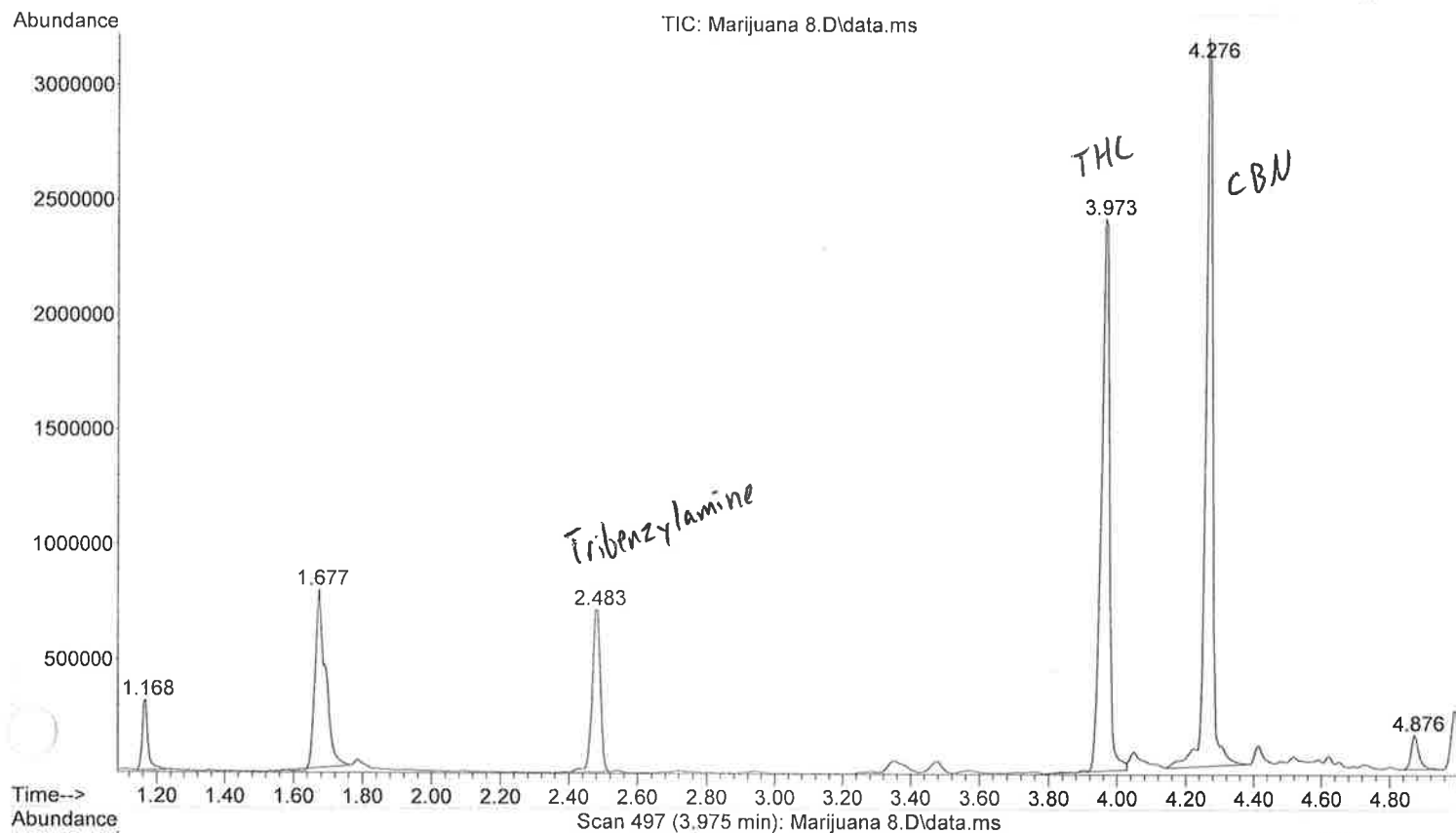
Sum of corrected areas: 124217080

MSDRUGS100.M Tue Aug 13 15:30:13 2019

$$\frac{33,291,829}{12,788,930} = 2.603$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 8.D
Operator : BTT
Acquired : 13 Aug 2019 14:09 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 35

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 8.D
Acq On : 13 Aug 2019 14:09
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 35 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 8.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.168	10	15	29	BB	308415	3535538	7.53%	2.922%
2	1.677	76	102	118	BV 4	745965	16112445	34.33%	13.317%
3	2.484	220	241	248	BV	712797	11736958	25.01%	9.701%
4	3.973	467	497	506	BV	2413840	40302514	85.87%	33.311%
5	4.276	526	549	568	VV	3296788	46934042	100.00%	38.792%
6	4.876	644	652	666	PV	147562	2366401	5.04%	1.956%

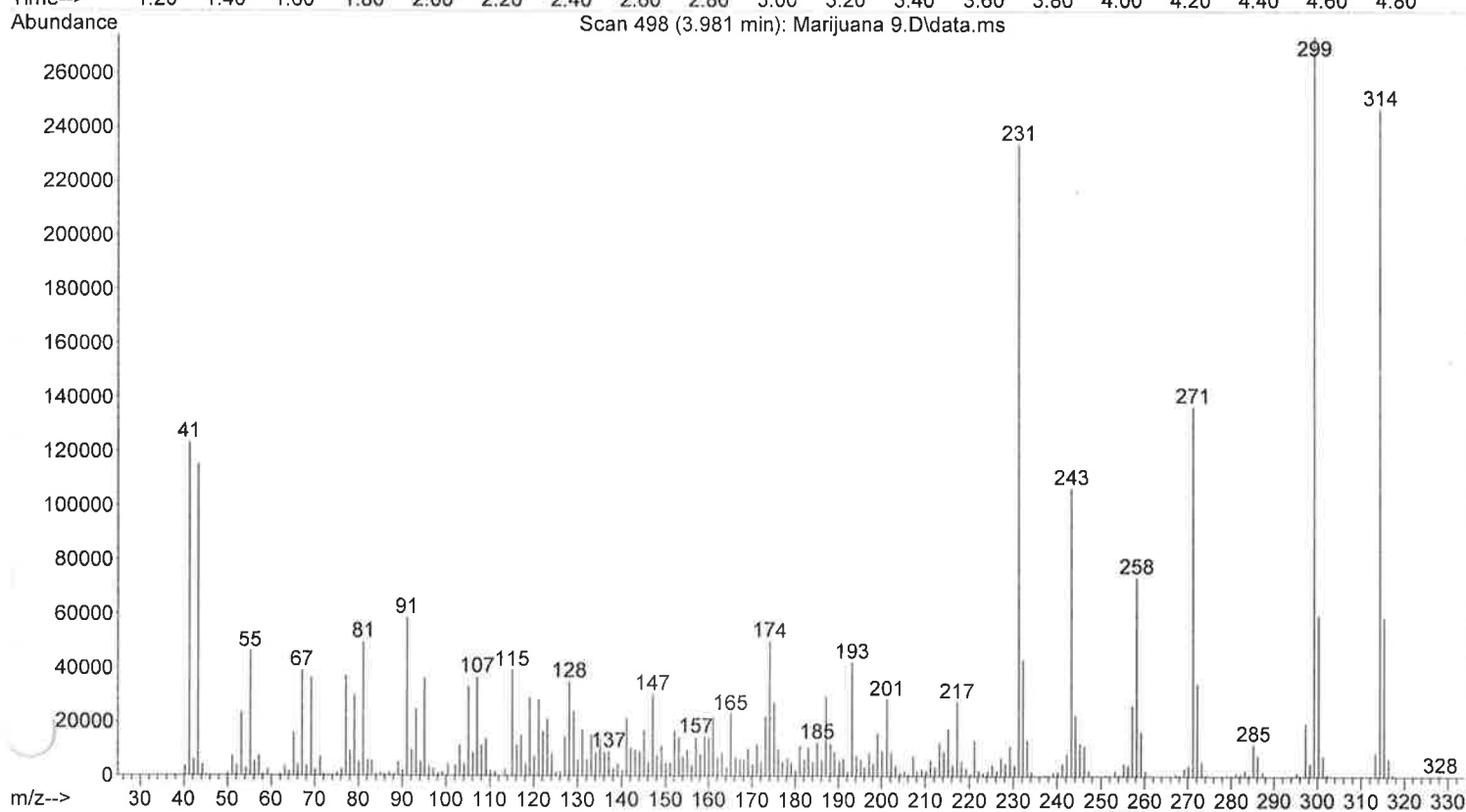
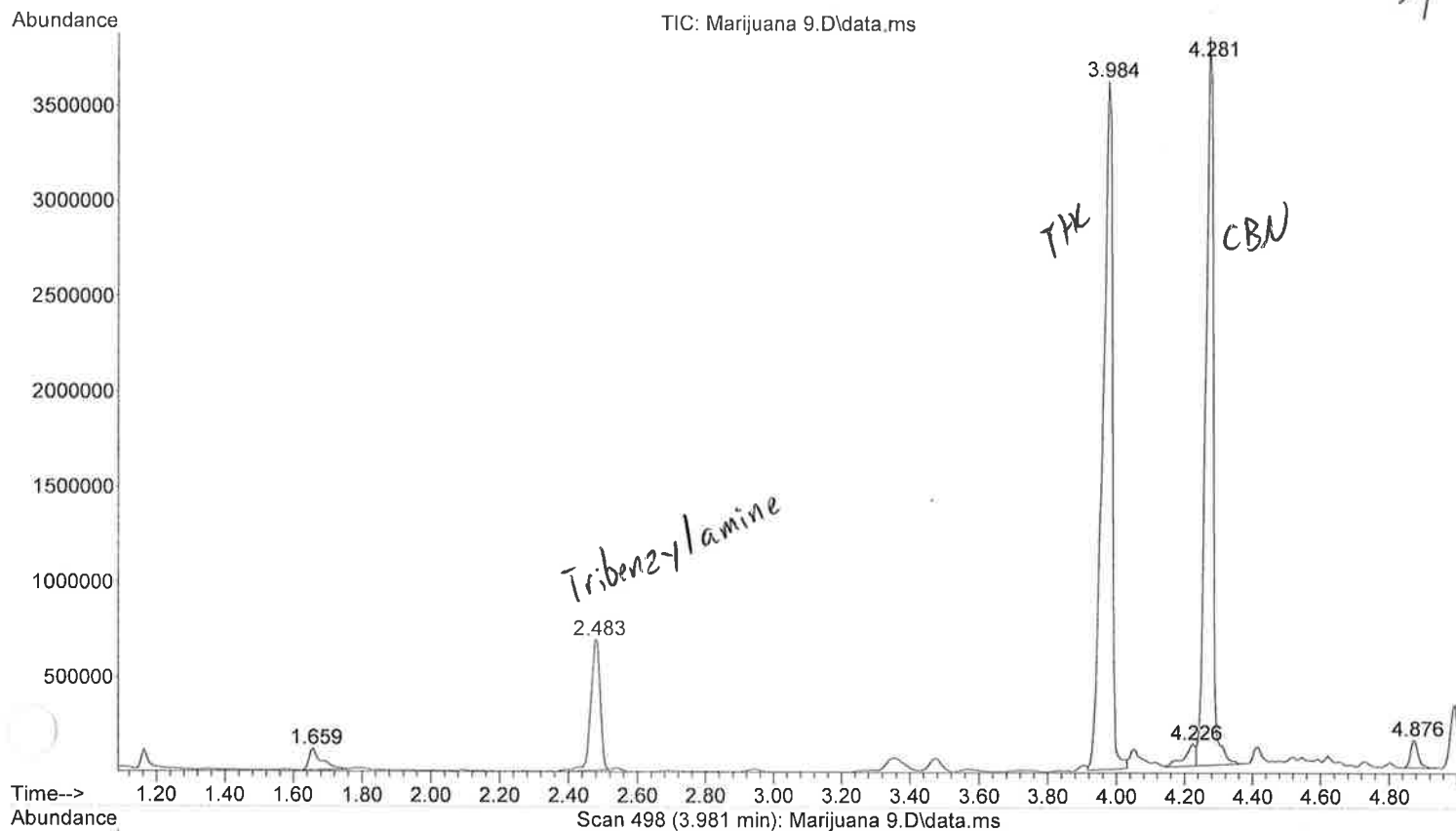
Sum of corrected areas: 120987898

MSDRUGS100.M Tue Aug 13 15:30:45 2019

$$\frac{40302514}{11736958} = 3.434$$

File : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 9.D
Operator : BTT
Acquired : 13 Aug 2019 14:32 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 36

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 9.D
Acq On : 13 Aug 2019 14:32
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 36 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 9.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.659	93	99	117	BV 4	110580	2753611	3.93%	1.824%
2	2.483	220	241	247	BV	685901	12922626	18.46%	8.560%
3	3.984	487	499	507	VV	3574964	70007646	100.00%	46.372%
4	4.226	526	540	542	VV 5	112114	2434461	3.48%	1.613%
5	4.281	542	550	566	VV	3882009	60619917	86.59%	40.154%
6	4.876	647	652	664	PB	145047	2231365	3.19%	1.478%

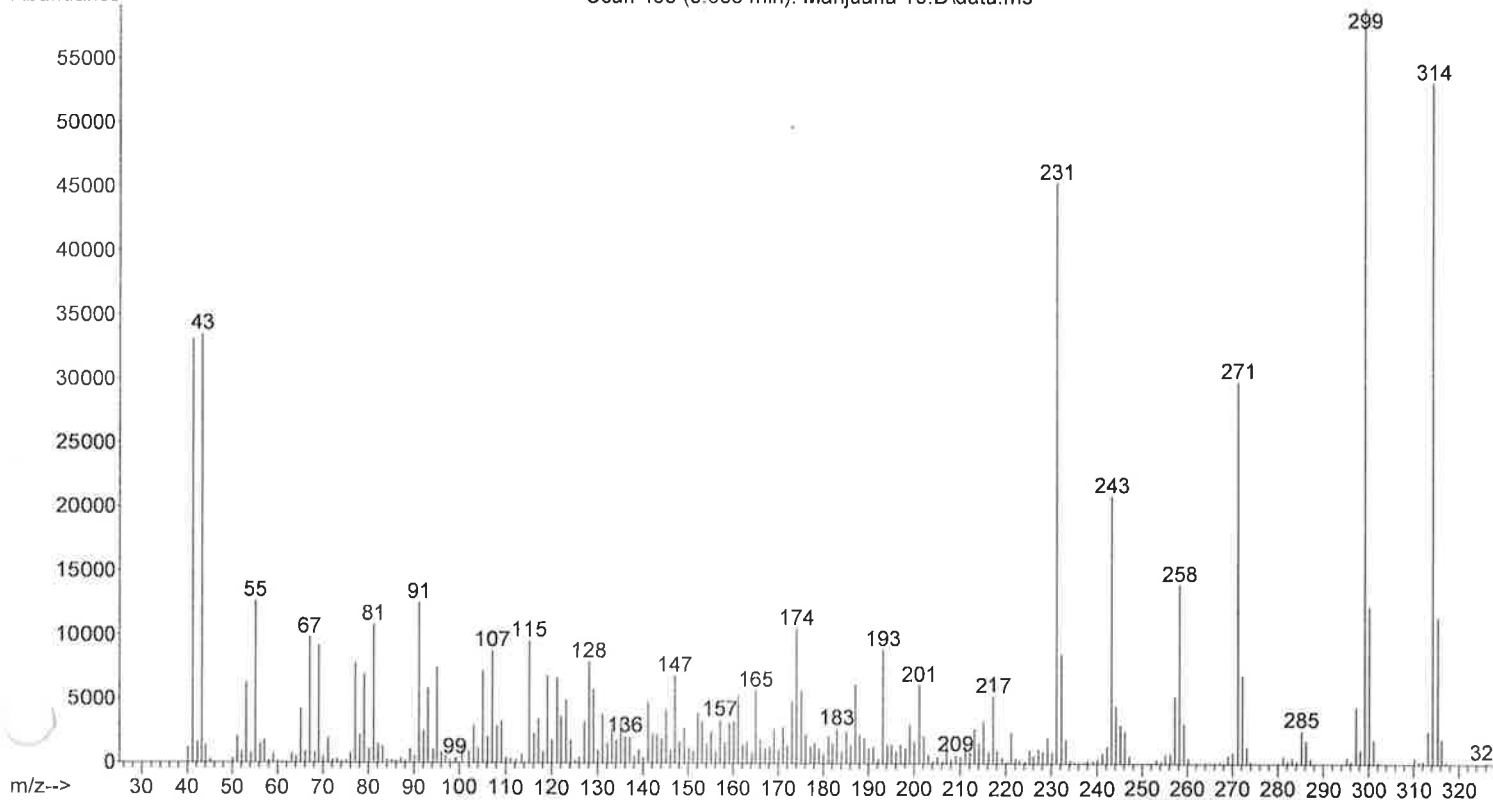
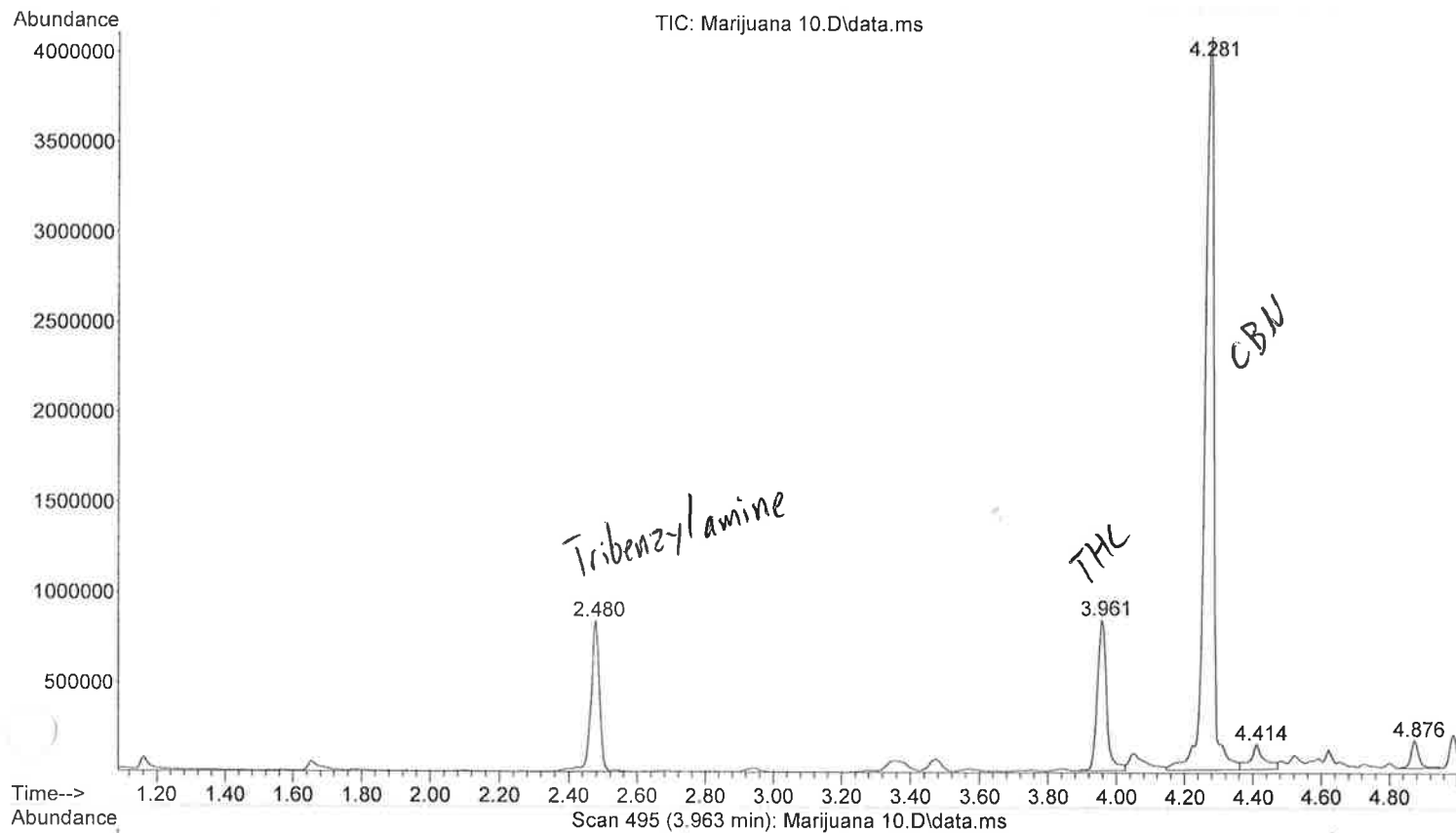
Sum of corrected areas: 150969625

MSDRUGS100.M Tue Aug 13 15:31:23 2019

$$\frac{70007646}{12922626} = 5.417$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\Marijuana 10.D
Operator : BTT
Acquired : 13 Aug 2019 14:56 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial number: 37

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : Marijuana 10.D
Acq On : 13 Aug 2019 14:56
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 37 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Marijuana 10.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.480	220	240	256	BB	822126	14719954	19.46%	13.072%
2	3.961	482	495	506	BV	831440	15802536	20.89%	14.033%
3	4.281	527	550	563	VV	4170000	75649878	100.00%	67.180%
4	4.414	563	572	582	VV	137231	3994970	5.28%	3.548%
5	4.876	643	652	666	VB 2	151914	2439719	3.23%	2.167%

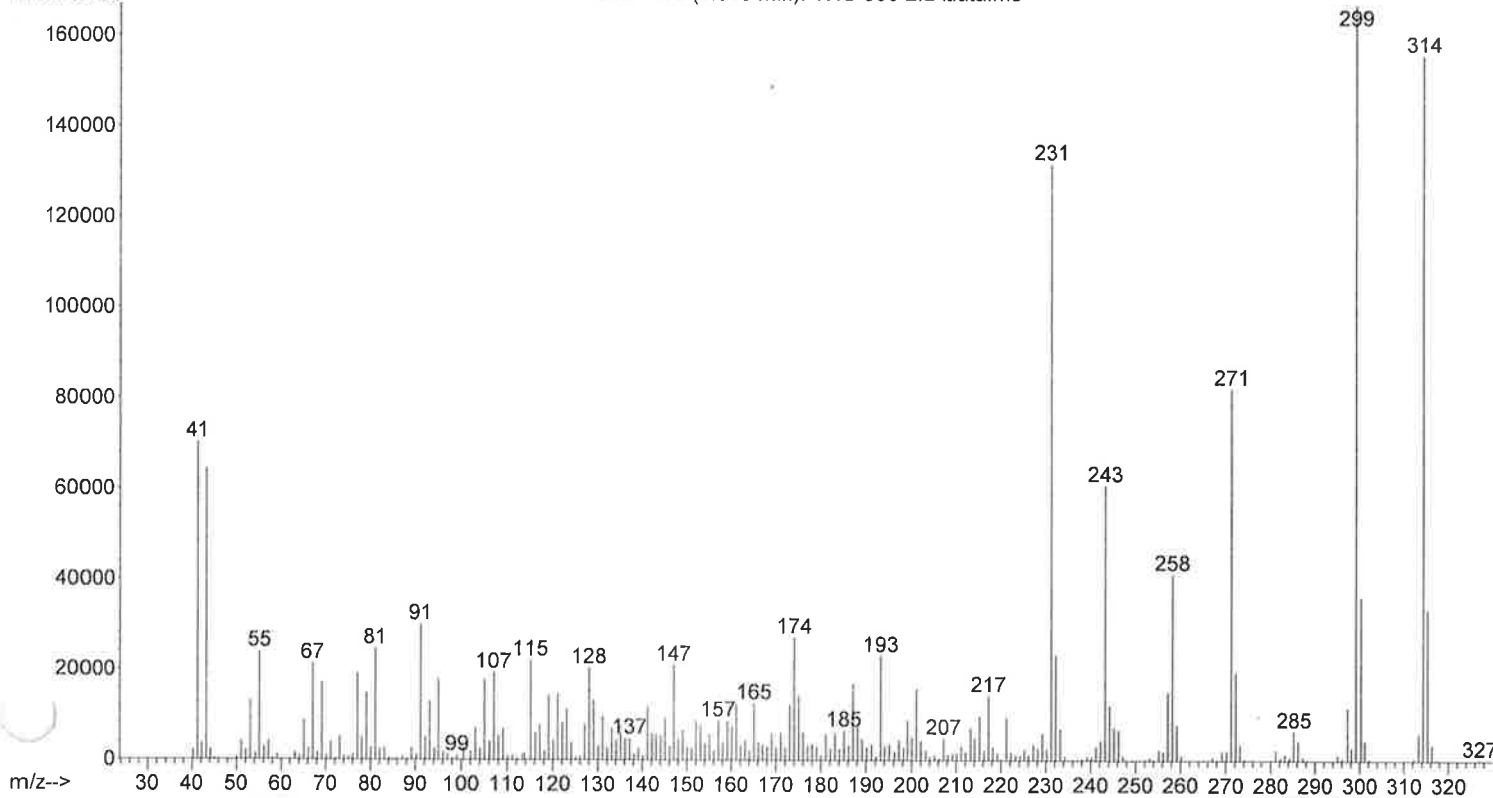
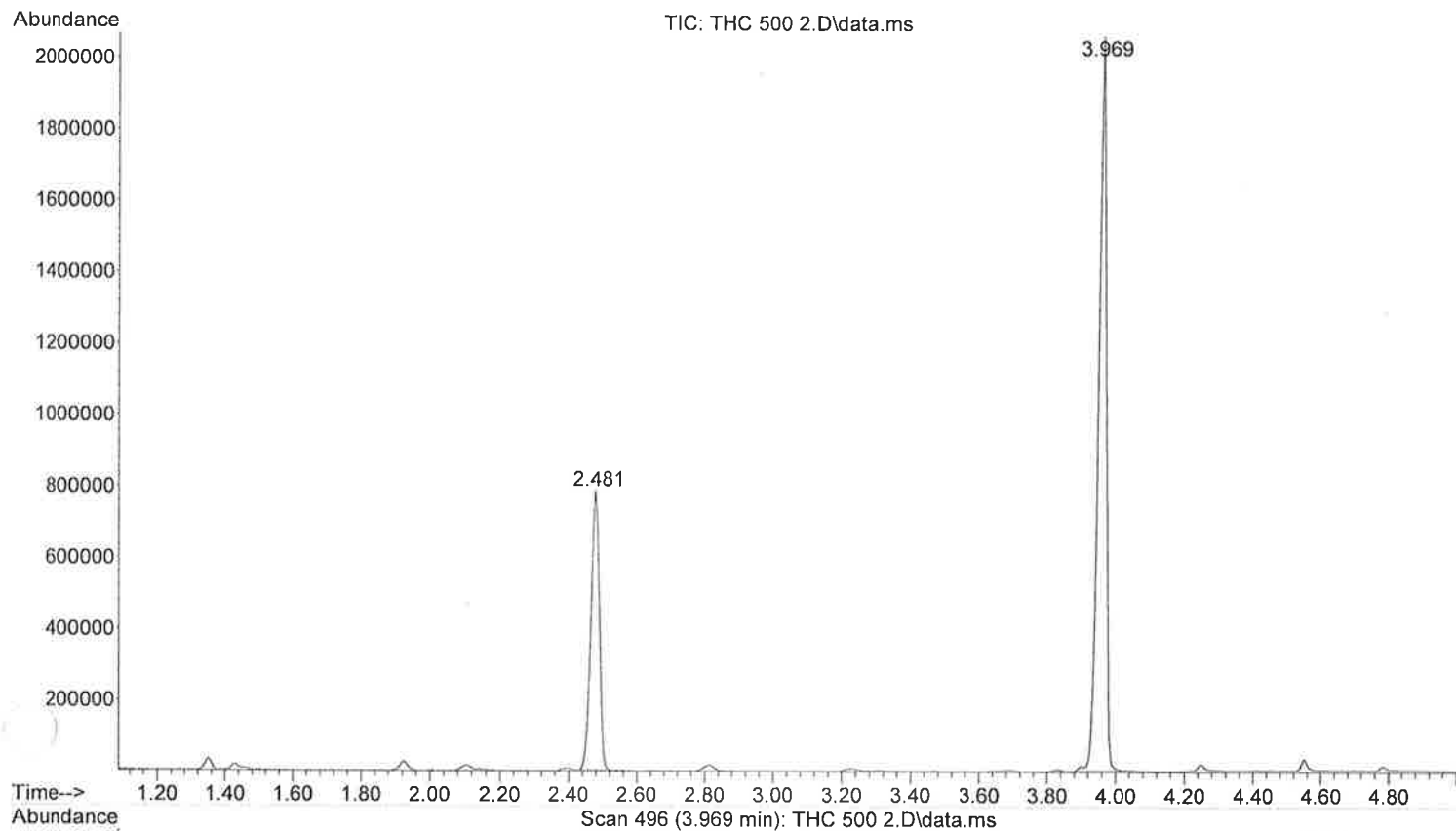
Sum of corrected areas: 112607057

MSDRUGS100.M Tue Aug 13 15:32:00 2019

$$\frac{15,802,536}{14,719,954} = 1.074$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-13-19\THC 500 2.D
Operator : BTT
Acquired : 13 Aug 2019 15:19 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Mr info : Methanol
Vial number: 27

8/13/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-13-19\
Data File : THC 500 2.D
Acq On : 13 Aug 2019 15:19
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/13/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.481	231	240	251	BB	762906	13292151	41.44%	29.300%
2	3.969	467	496	507	BB	1916768	32073262	100.00%	70.700%

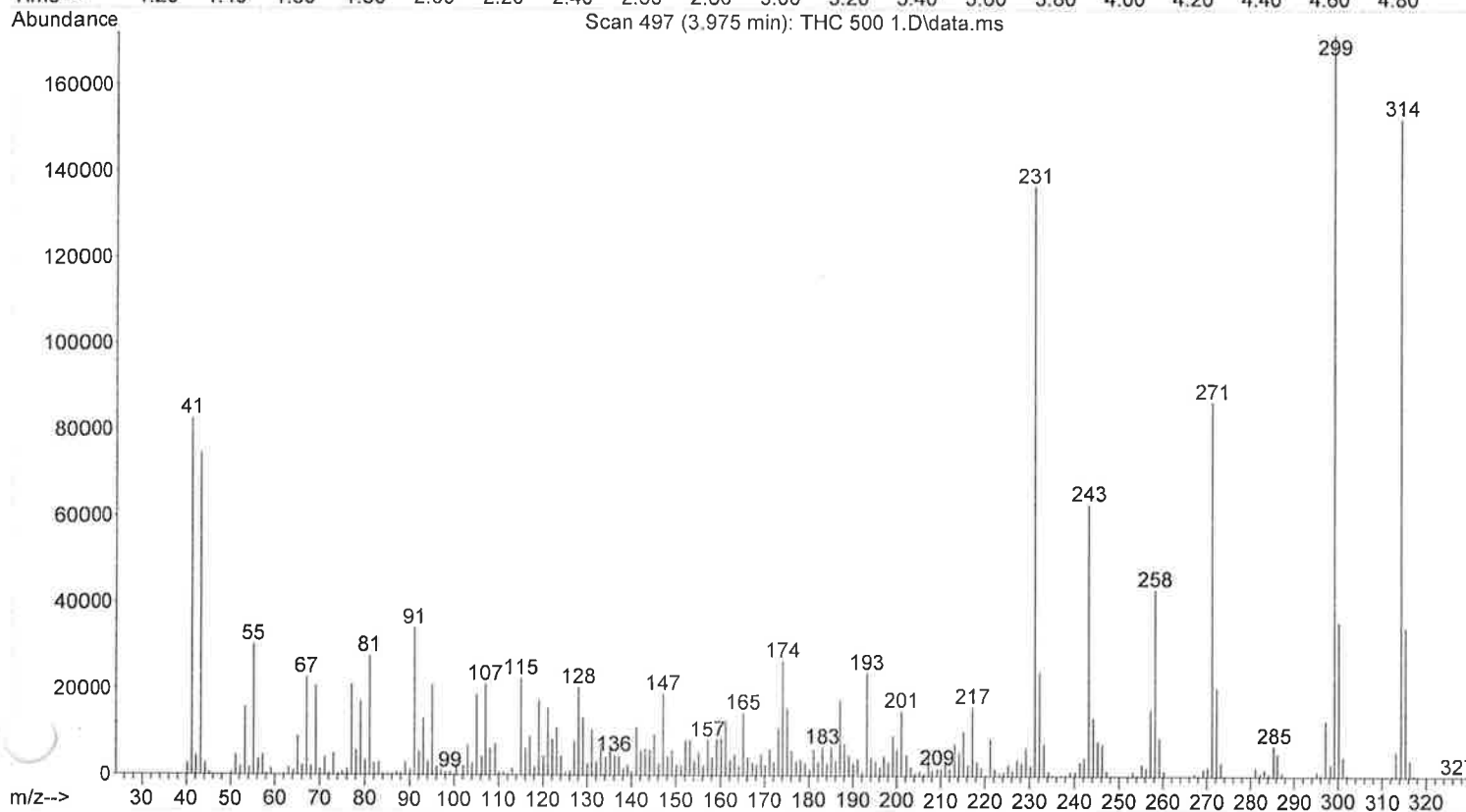
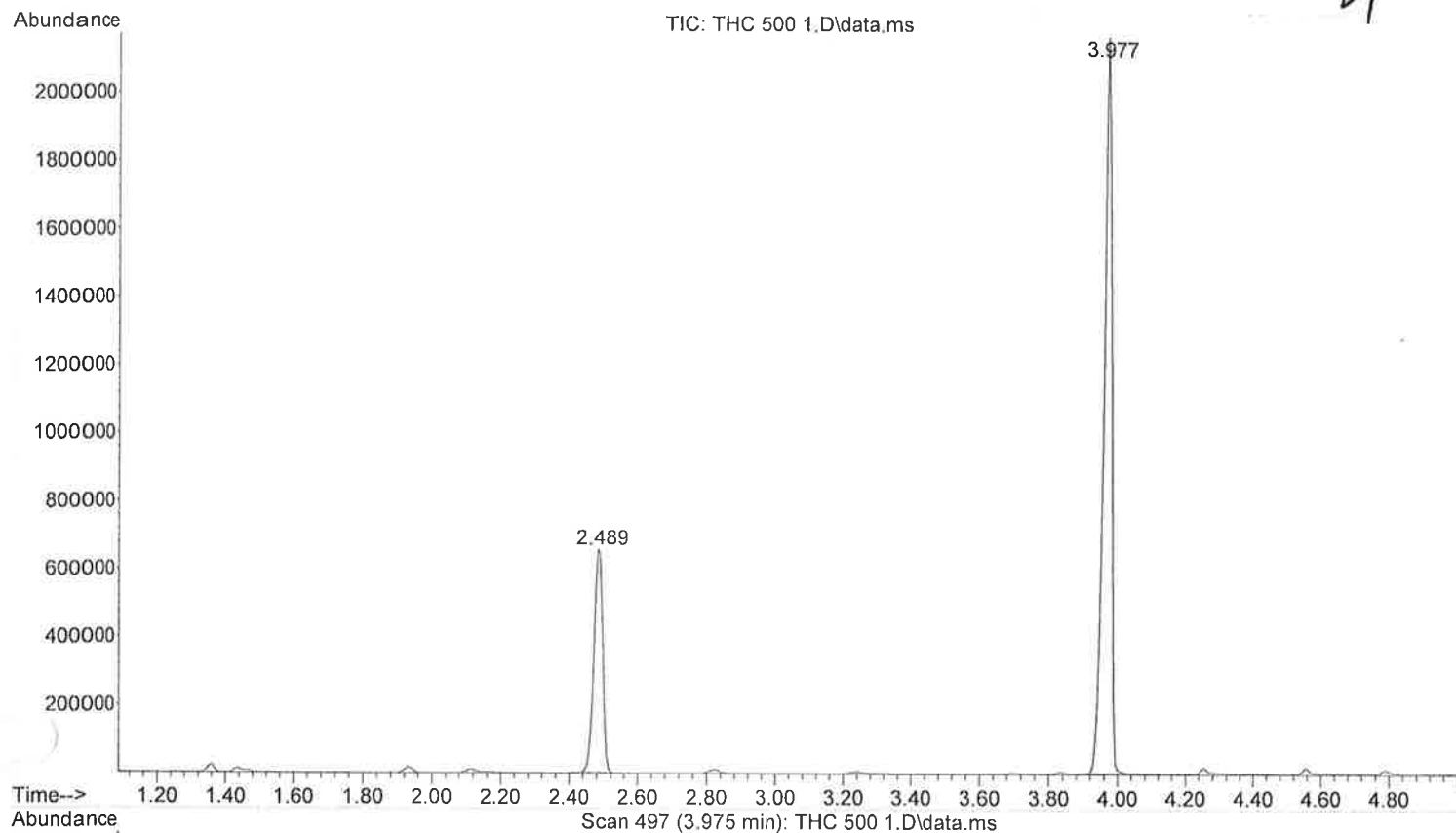
Sum of corrected areas: 45365413

MSDRUGS100.M Tue Aug 13 16:00:55 2019

$$\frac{32,073,262}{13,292,151} = 2.413$$

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\THC 500 1.D
Operator : BTT
Acquired : 14 Aug 2019 15:11 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : THC 500 1.D
Acq On : 14 Aug 2019 15:11
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

8/16/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.489	233	242	252	BB	656074	11290701	33.14%	24.890%
2	3.977	484	497	507	BB	2123284	34071128	100.00%	75.110%

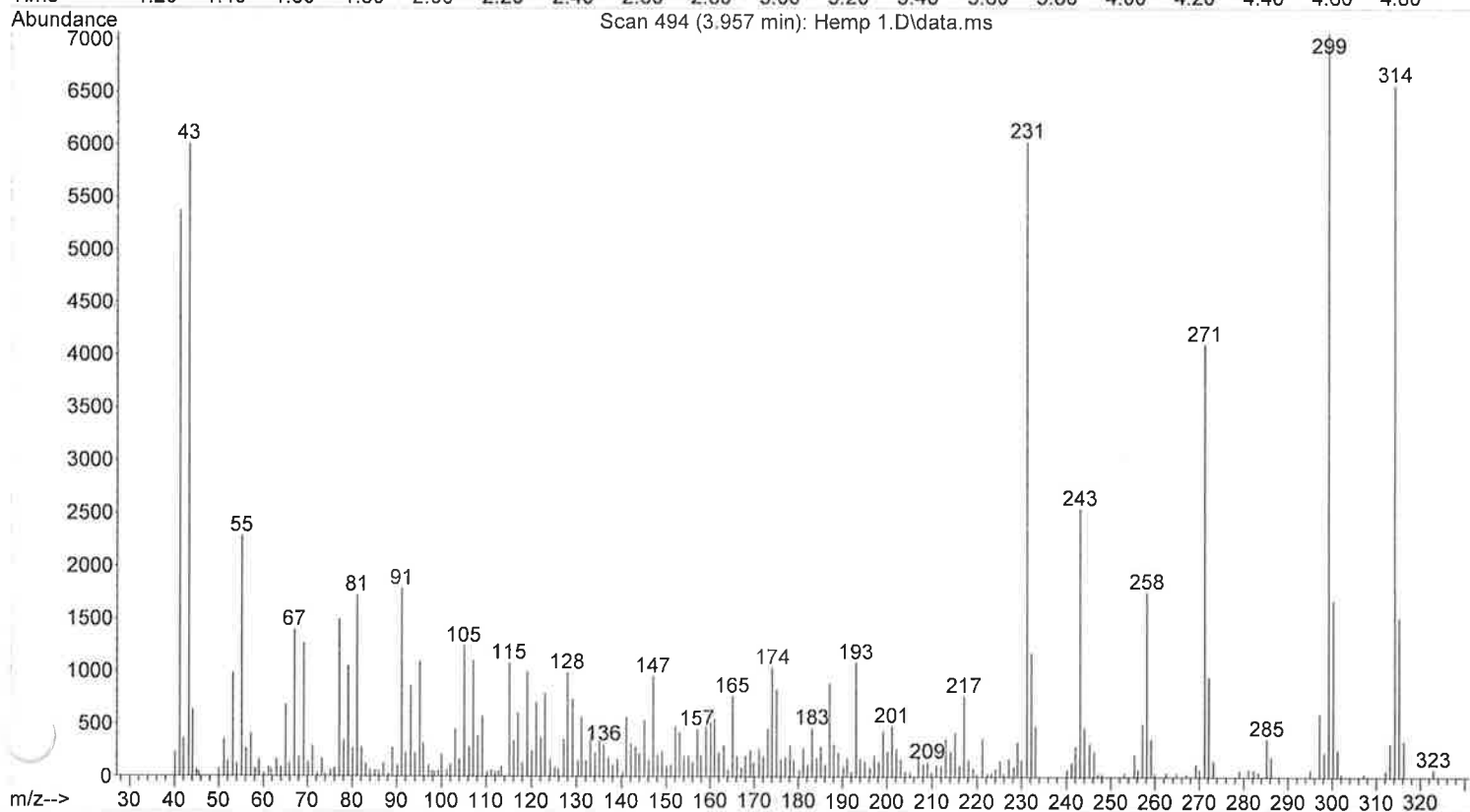
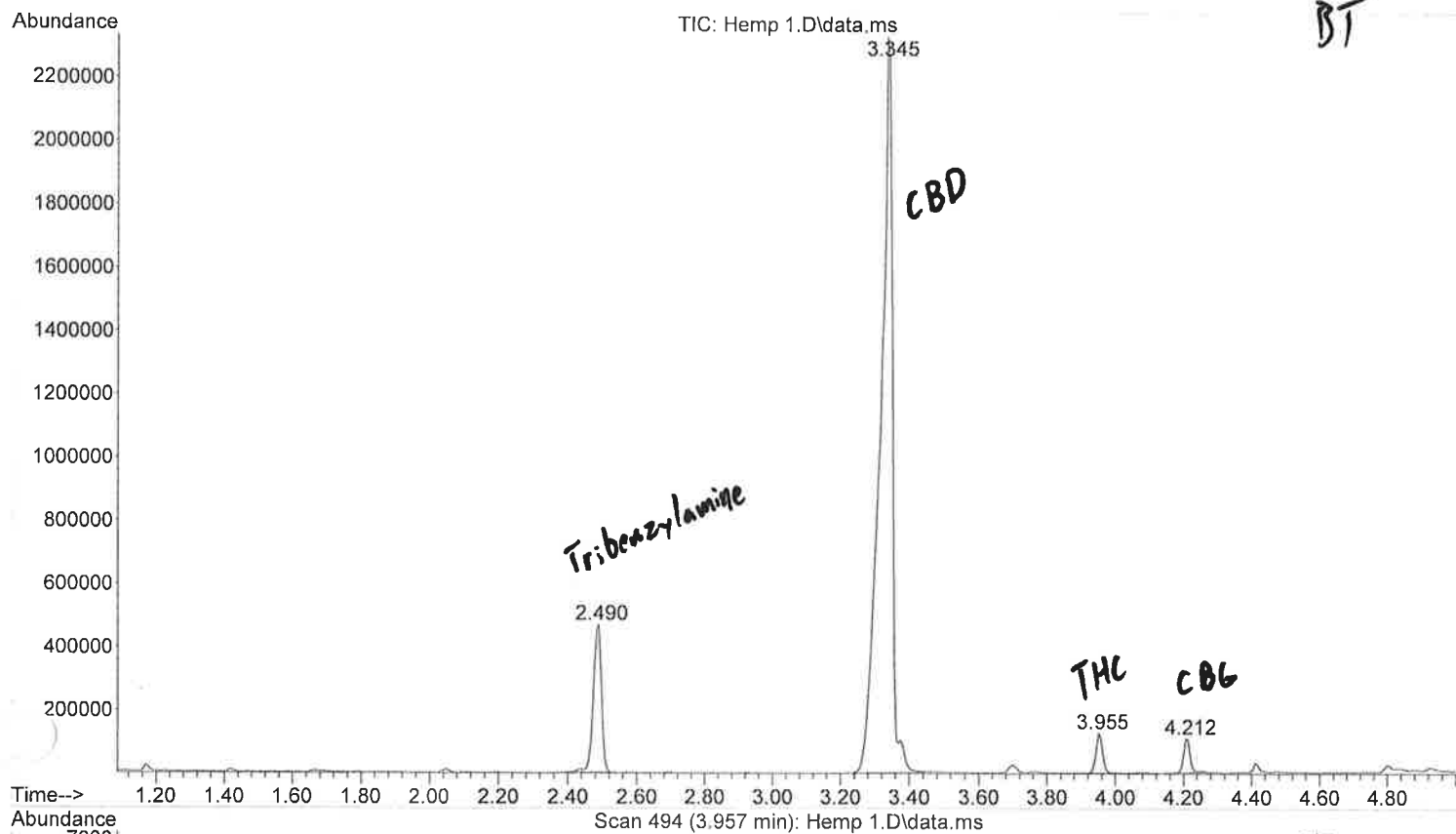
Sum of corrected areas: 45361830

MSDRUGS100.M Fri Aug 16 09:49:23 2019

$$\frac{34071128}{11290701} = 3.018$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 1.D
Operator : BTT
Acquired : 14 Aug 2019 15:34 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 28

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 1.D
Acq On : 14 Aug 2019 15:34
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 28 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.490	228	242	252	BB	460029	7540214	13.20%	11.137%
2	3.345	370	389	413	BB	2332674	57103270	100.00%	84.344%
3	3.955	487	494	502	BB	121175	1629934	2.85%	2.407%
4	4.212	530	538	547	BB	107603	1429753	2.50%	2.112%

Sum of corrected areas: 67703172

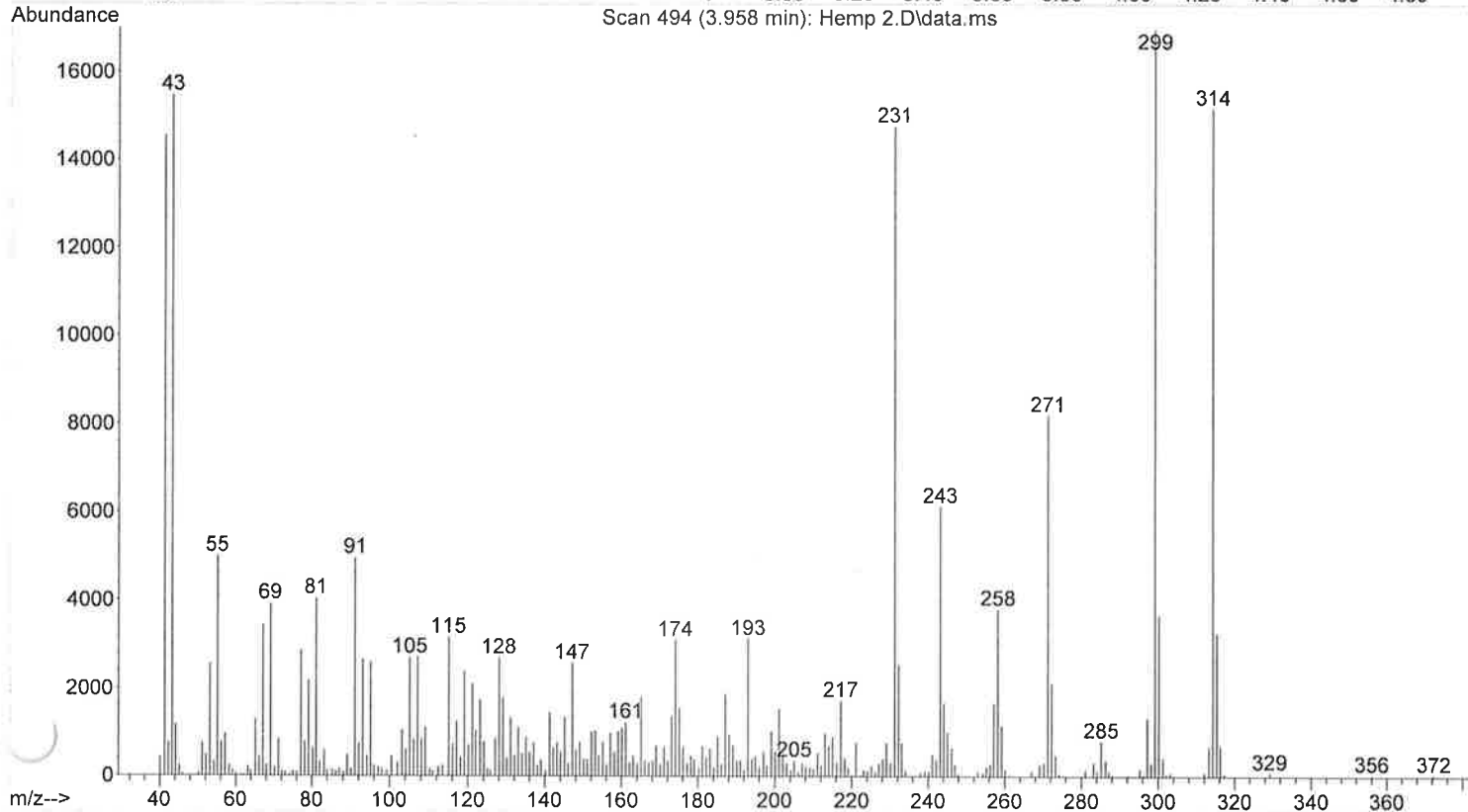
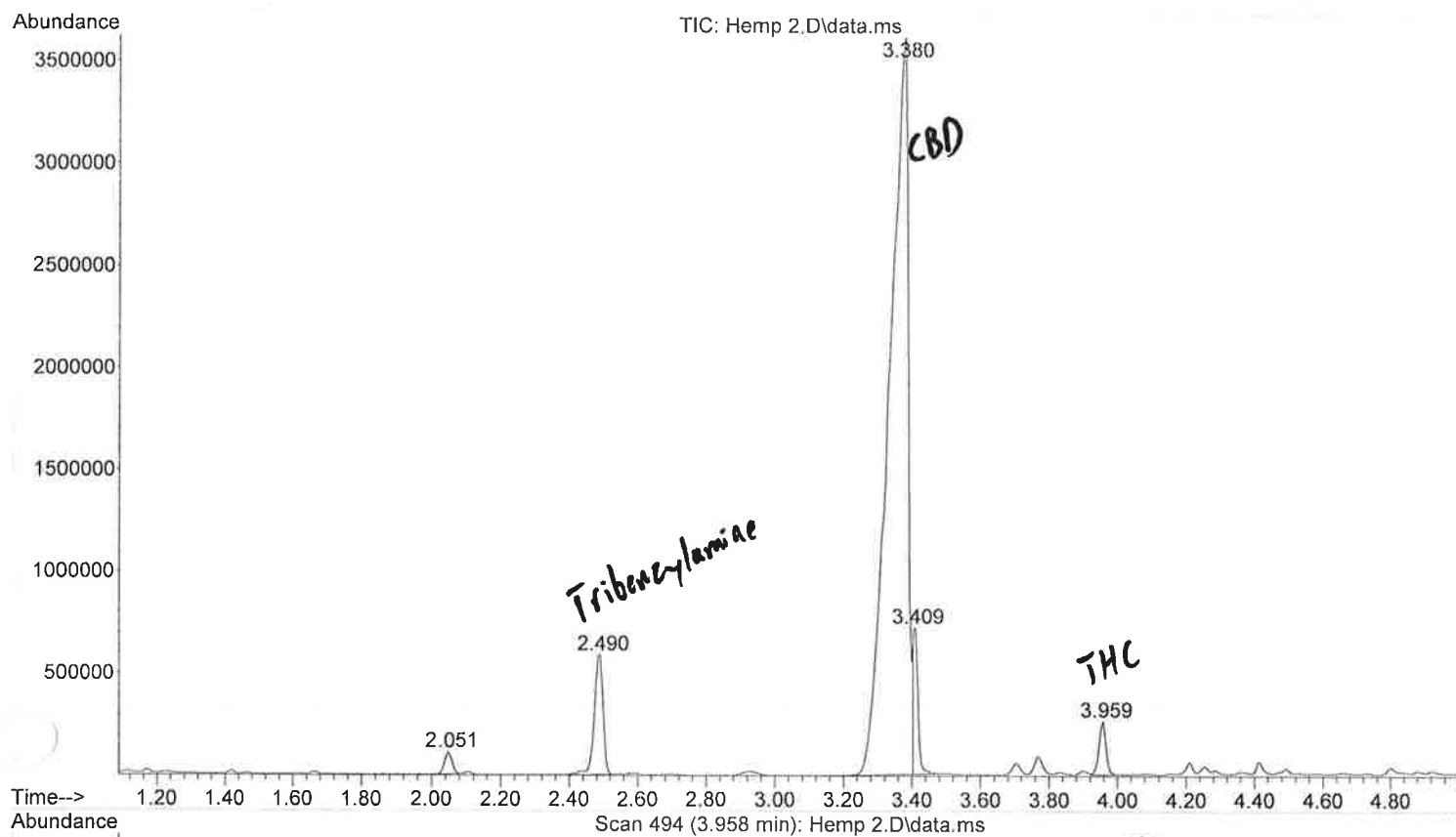
MSDRUGS100.M Fri Aug 16 09:50:17 2019

$$\frac{1629934}{7540214} = 0.216$$

8/16/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 2.D
Operator : BTT
Acquired : 14 Aug 2019 15:58 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 29

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 2.D
Acq On : 14 Aug 2019 15:58
Operator : BTT
Sample : Standard
c : Methanol
S Vial : 29 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.051	160	166	173	BV	104372	1582780	1.15%	0.981%
2	2.490	225	242	249	BB	590158	10497077	7.63%	6.503%
3	3.380	365	395	399	BV	3606687	137647643	100.00%	85.276%
4	3.409	399	400	413	VB	720929	8027453	5.83%	4.973%
5	3.959	488	494	504	VB	252099	3658678	2.66%	2.267%

Sum of corrected areas: 161413631

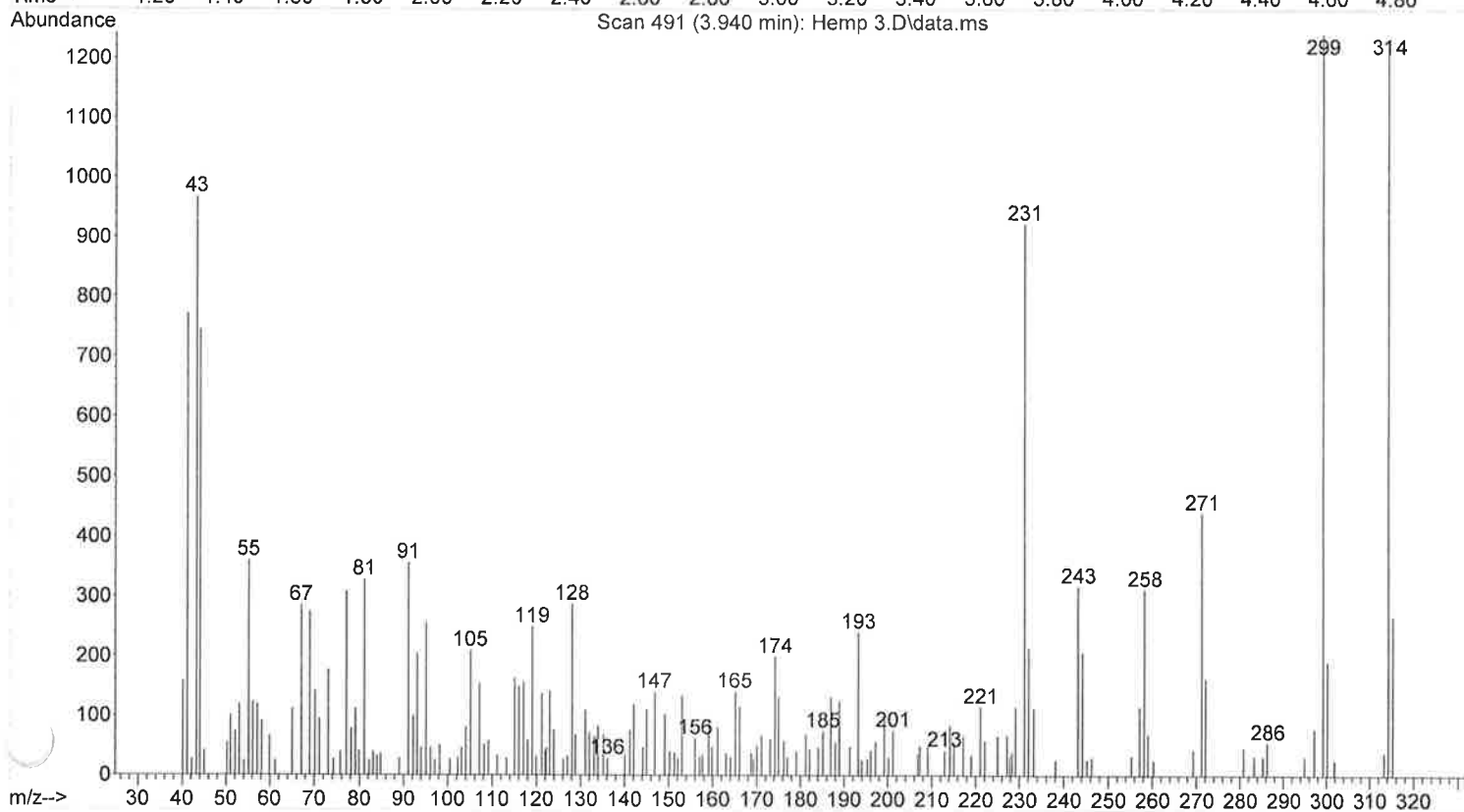
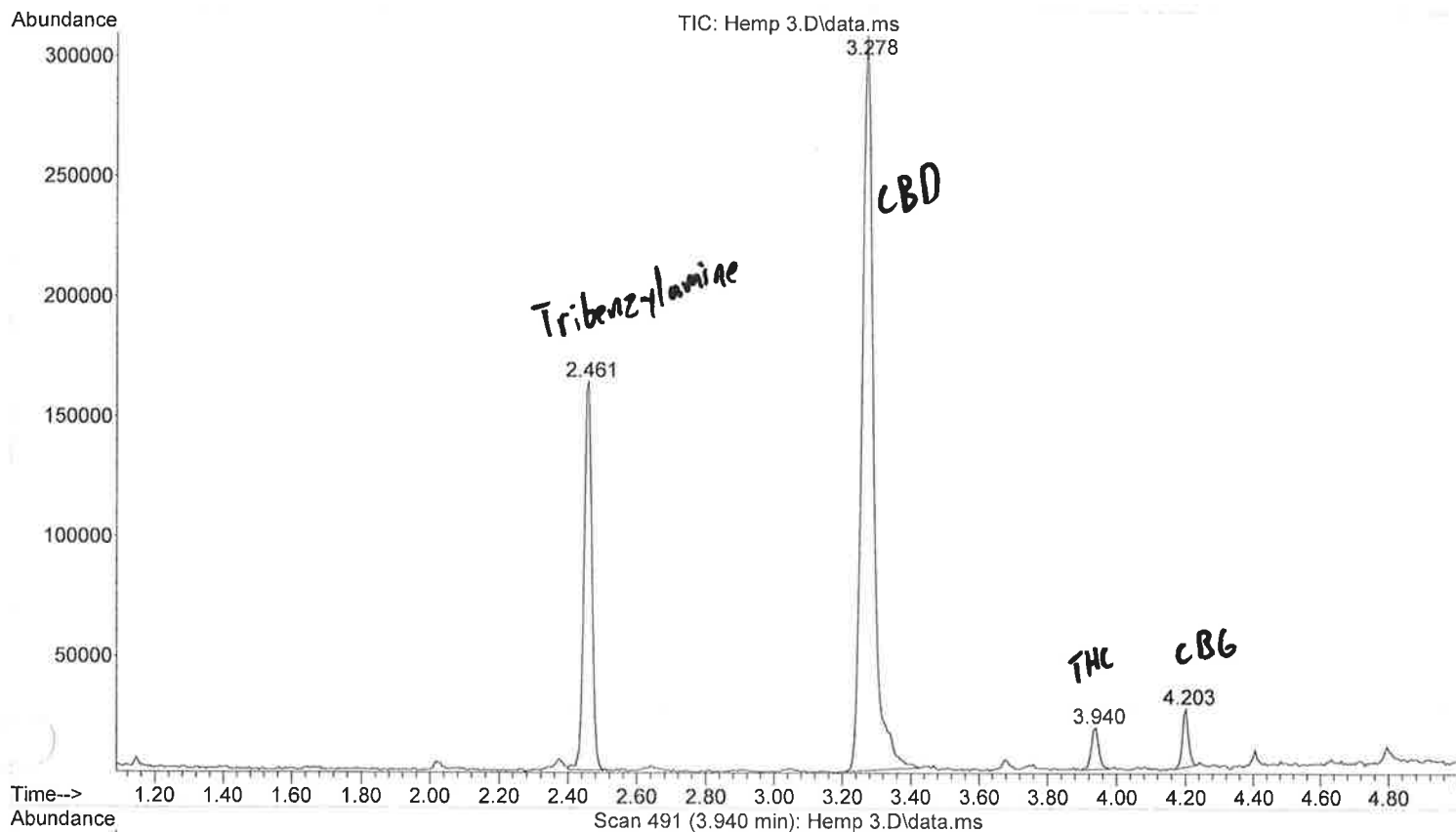
MSDRUGS100.M Fri Aug 16 09:50:51 2019

$$\frac{3658678}{10497077} = 0.349$$

8/16/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 3.D
Operator : BTT
Acquired : 14 Aug 2019 16:22 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 30

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 3.D
Acq On : 14 Aug 2019 16:22
Operator : BTT
Sample : Standard
Solvent : Methanol
Vial : 30 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 3.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.461	227	237	249	VV	161664	2601667	35.65%	24.912%
2	3.278	365	377	403	BV	302439	7297585	100.00%	69.878%
3	3.940	484	491	498	BV 4	16933	257090	3.52%	2.462%
4	4.203	530	536	542	BV	23063	287031	3.93%	2.748%

Sum of corrected areas: 10443373

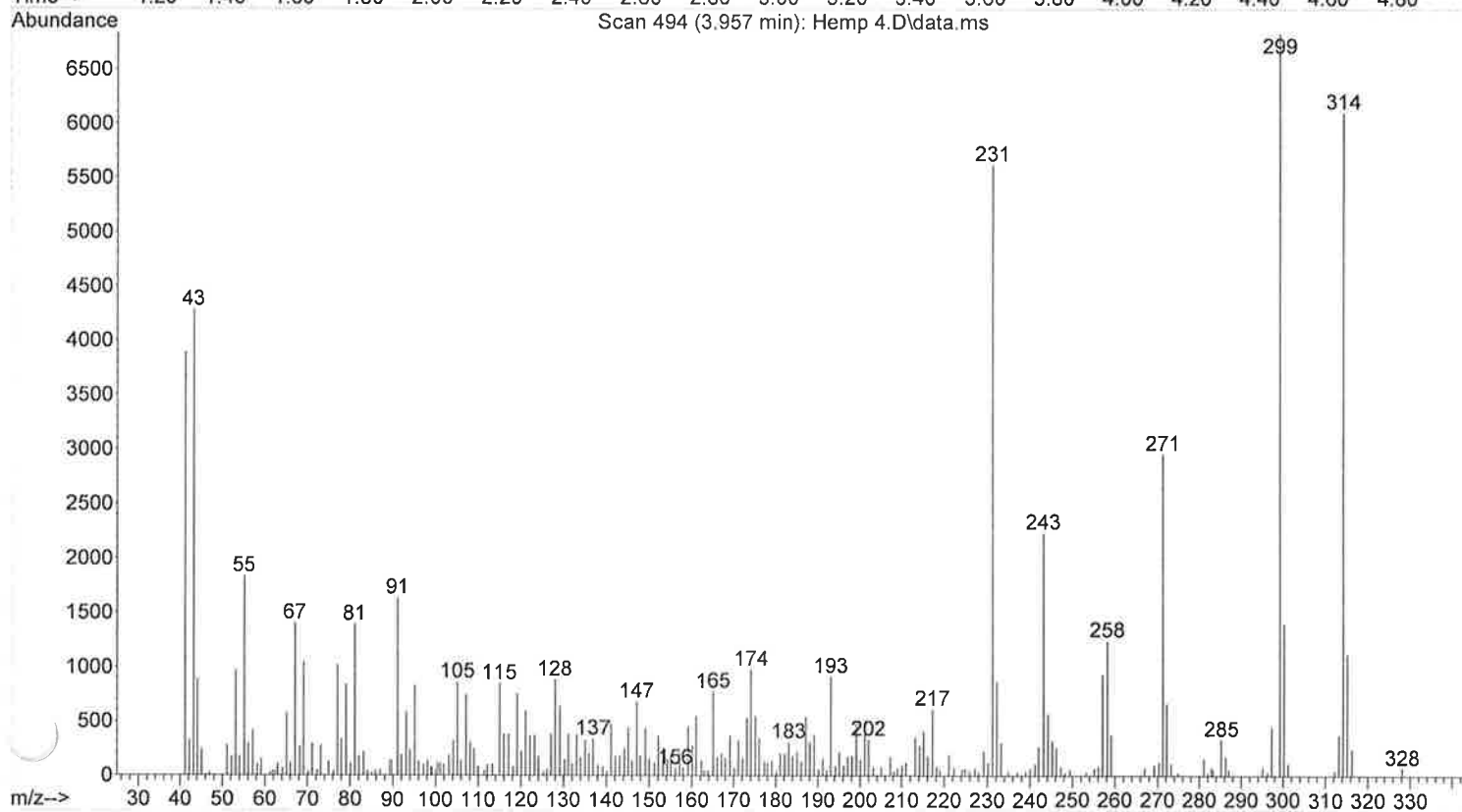
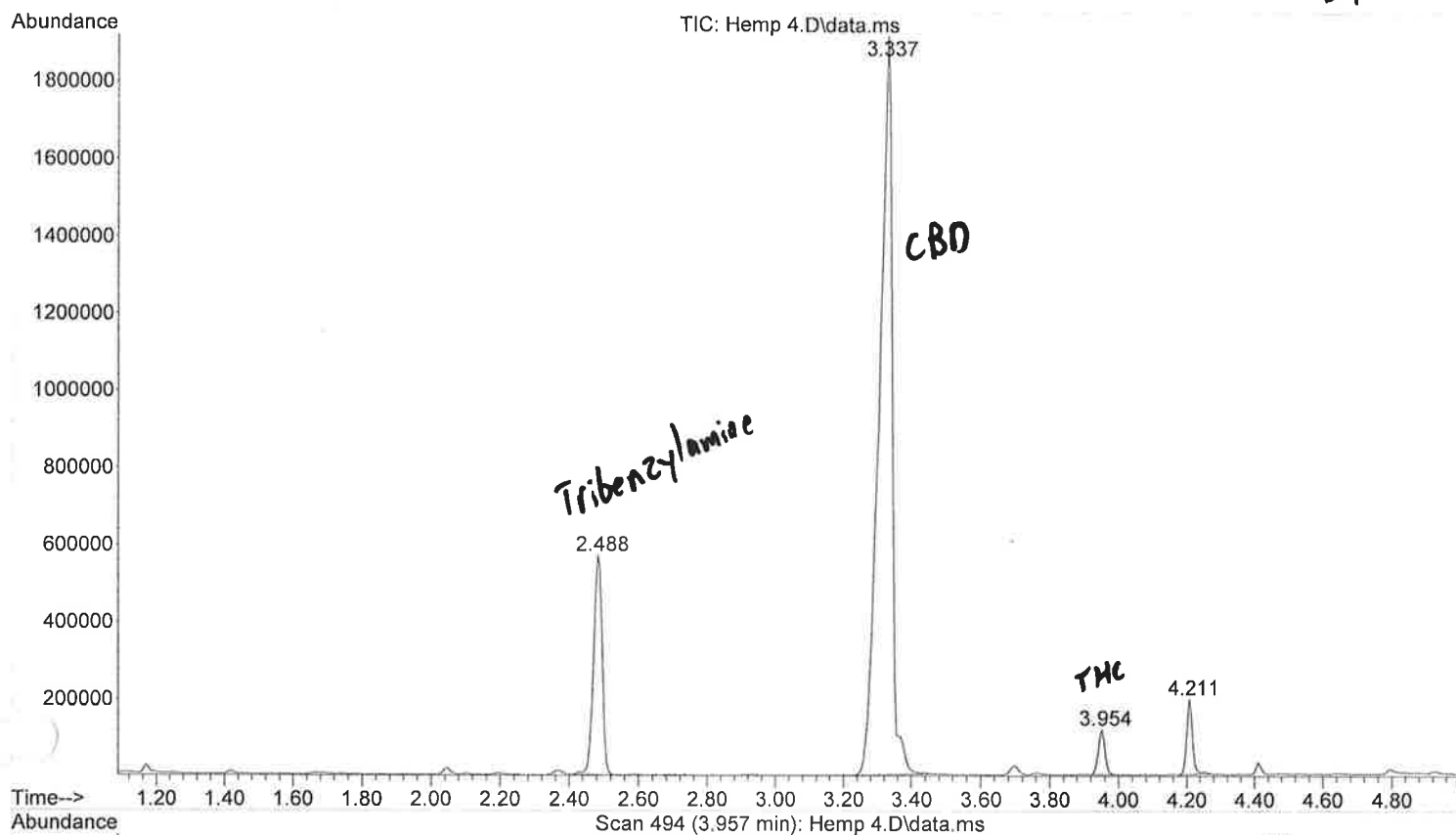
MSDRUGS100.M Fri Aug 16 09:51:45 2019

$$\frac{257090}{2601667} = 0.099$$

8/16/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 4.D
Operator : BTT
Acquired : 14 Aug 2019 16:45 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 31

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 4.D
Acq On : 14 Aug 2019 16:45
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 31 Sample Multiplier: 1

8/16/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 4.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.488	228	242	253	BB	559619	9559019	18.47%	14.675%
2	3.337	369	387	411	BB	1884931	51761338	100.00%	79.464%
3	3.954	487	493	501	BB	112447	1518152	2.93%	2.331%
4	4.211	532	538	548	BB	186476	2299390	4.44%	3.530%

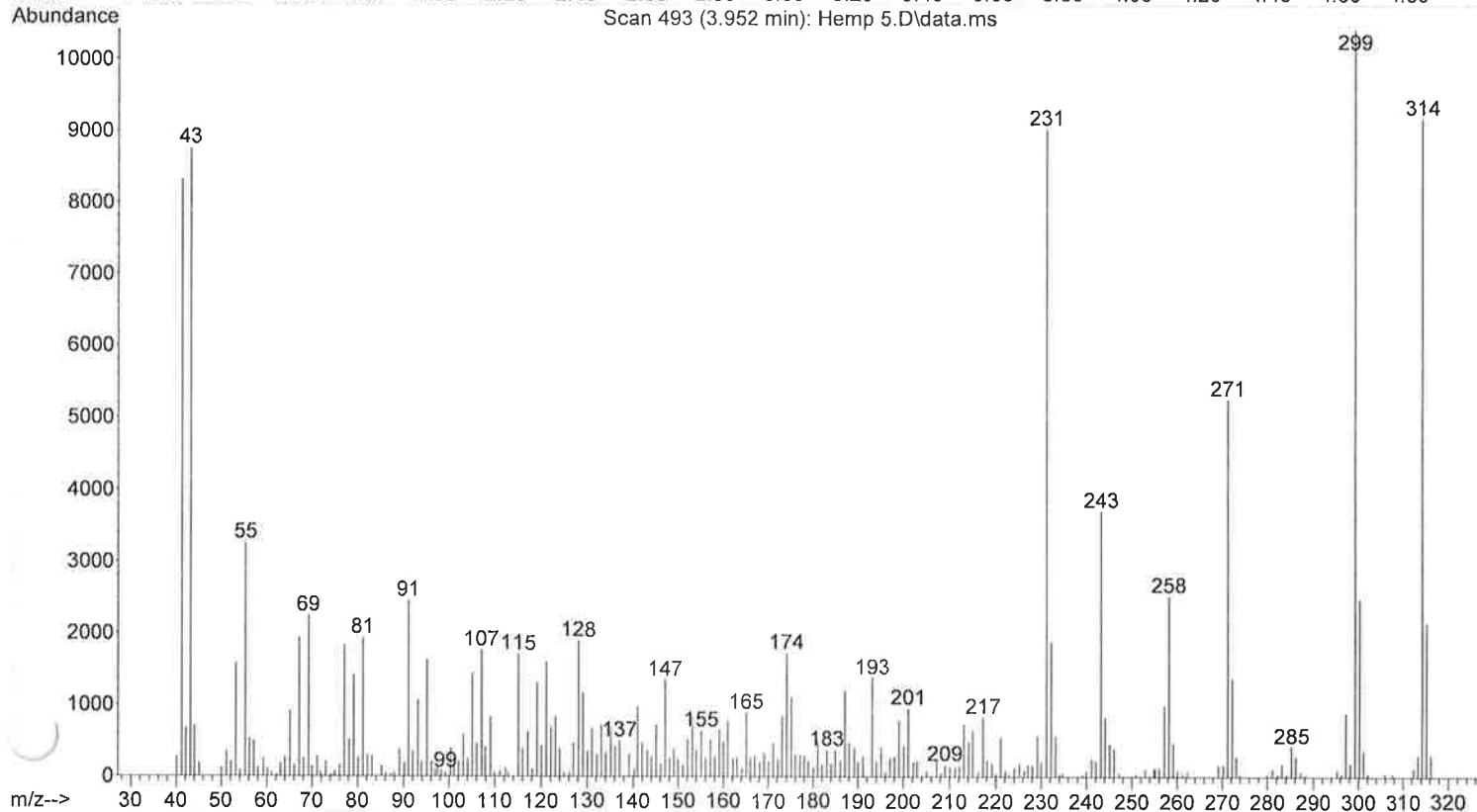
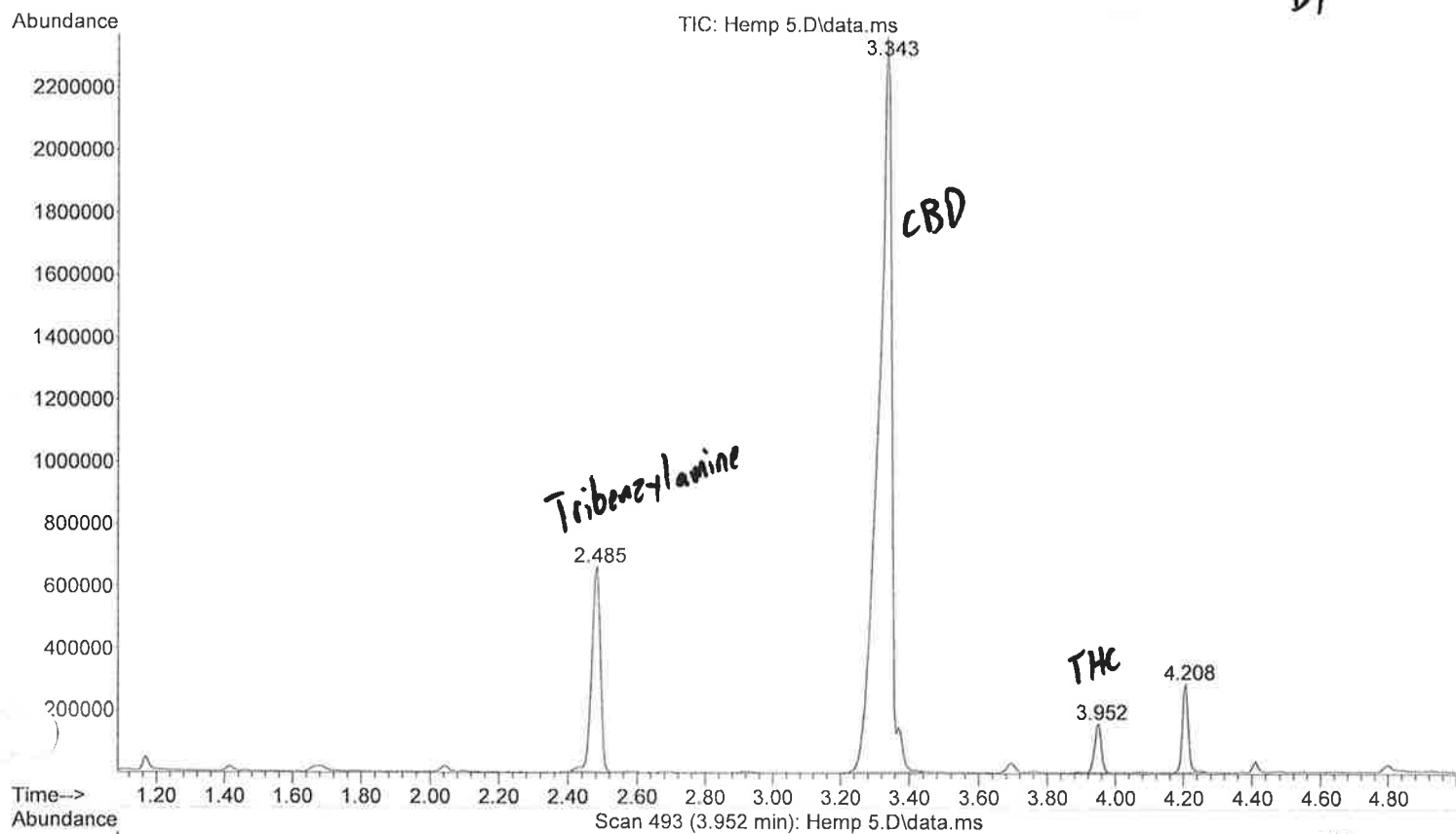
Sum of corrected areas: 65137899

MSDRUGS100.M Fri Aug 16 09:52:34 2019

$$\frac{1518152}{9559019} = 0.159$$

File :C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 5.D
Operator : BTT
Acquired : 15 Aug 2019 8:12 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 32

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 5.D
Acq On : 15 Aug 2019 8:12
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 32 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 5.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.485	226	241	253	BB	645322	11412509	17.70%	14.010%
2	3.343	367	388	410	BB	2337990	64476151	100.00%	79.150%
3	3.952	480	493	500	BB	156219	2143765	3.32%	2.632%
4	4.208	530	537	548	BB	279315	3428296	5.32%	4.209%

Sum of corrected areas: 81460720

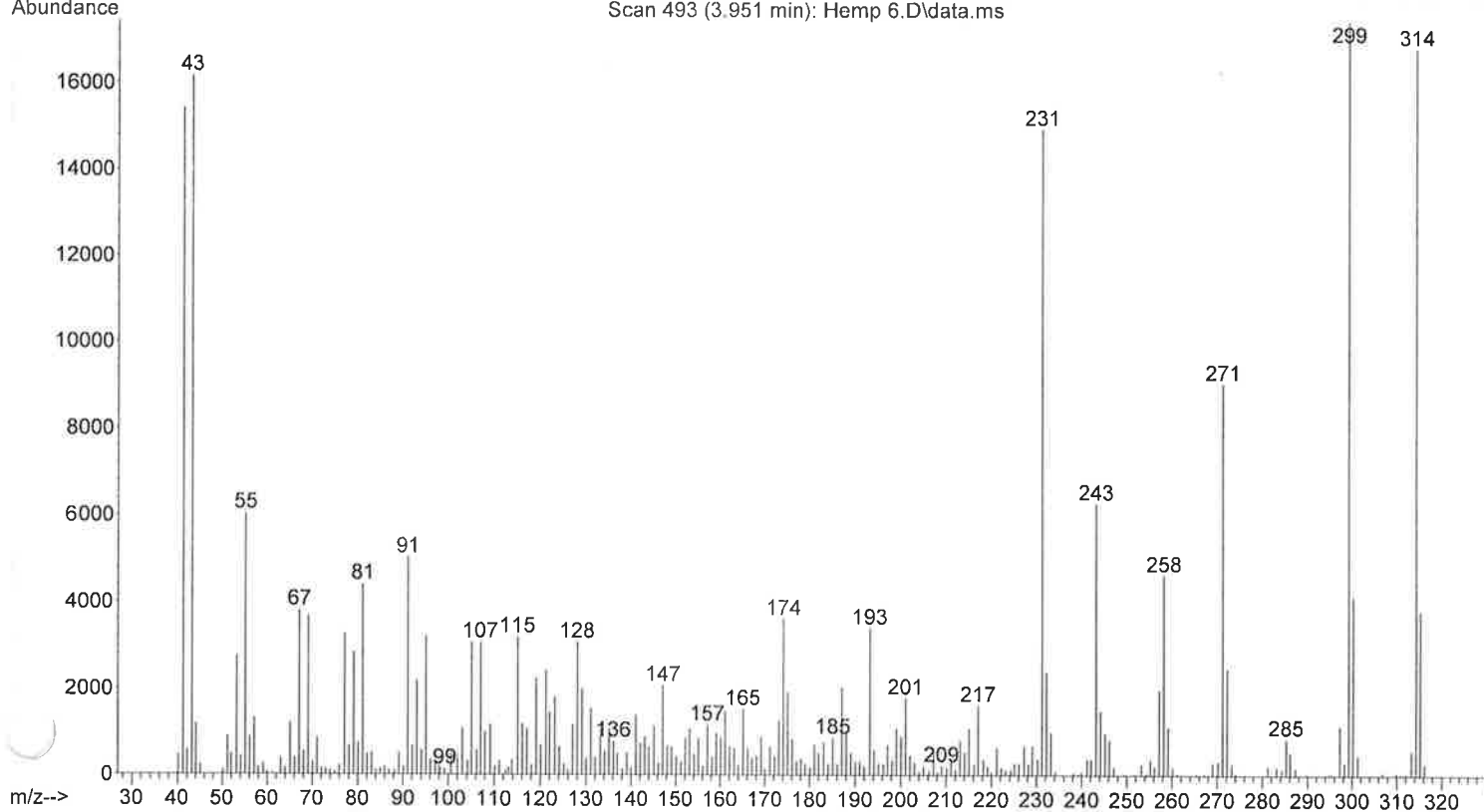
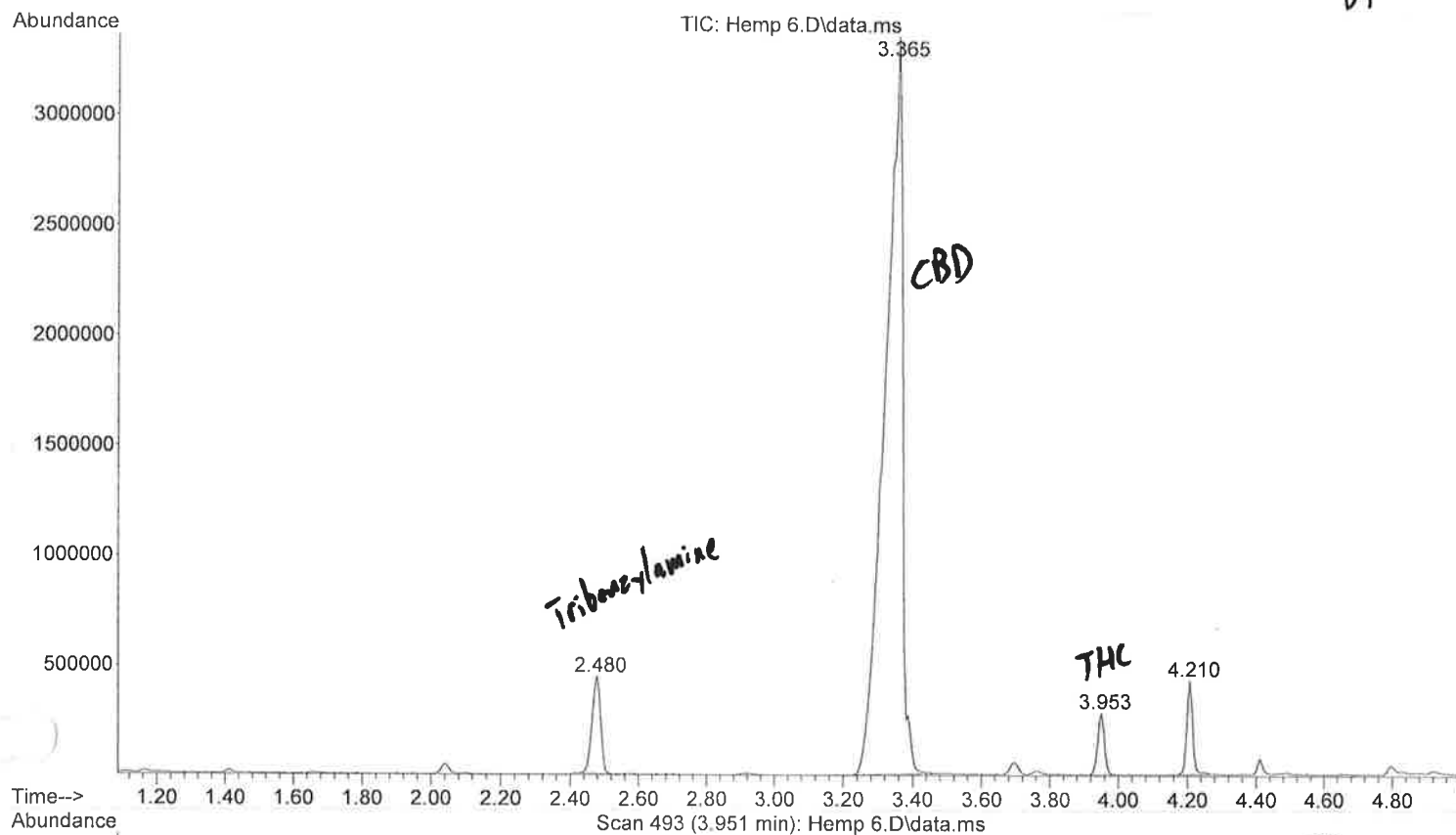
MSDRUGS100.M Fri Aug 16 09:53:11 2019

$$\frac{2143765}{11412509} = 0.188$$

8/16/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 6.D
Operator : BTT
Acquired : 15 Aug 2019 8:36 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 33

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 6.D
Acq On : 15 Aug 2019 8:36
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 33 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 6.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.480	228	240	251	BB	431515	7673195	6.58%	5.772%
2	3.365	368	392	413	BB	3294727	116543144	100.00%	87.670%
3	3.953	487	493	502	BB	271147	3687055	3.16%	2.774%
4	4.210	524	537	550	BB	407943	5030778	4.32%	3.784%

Sum of corrected areas: 132934173

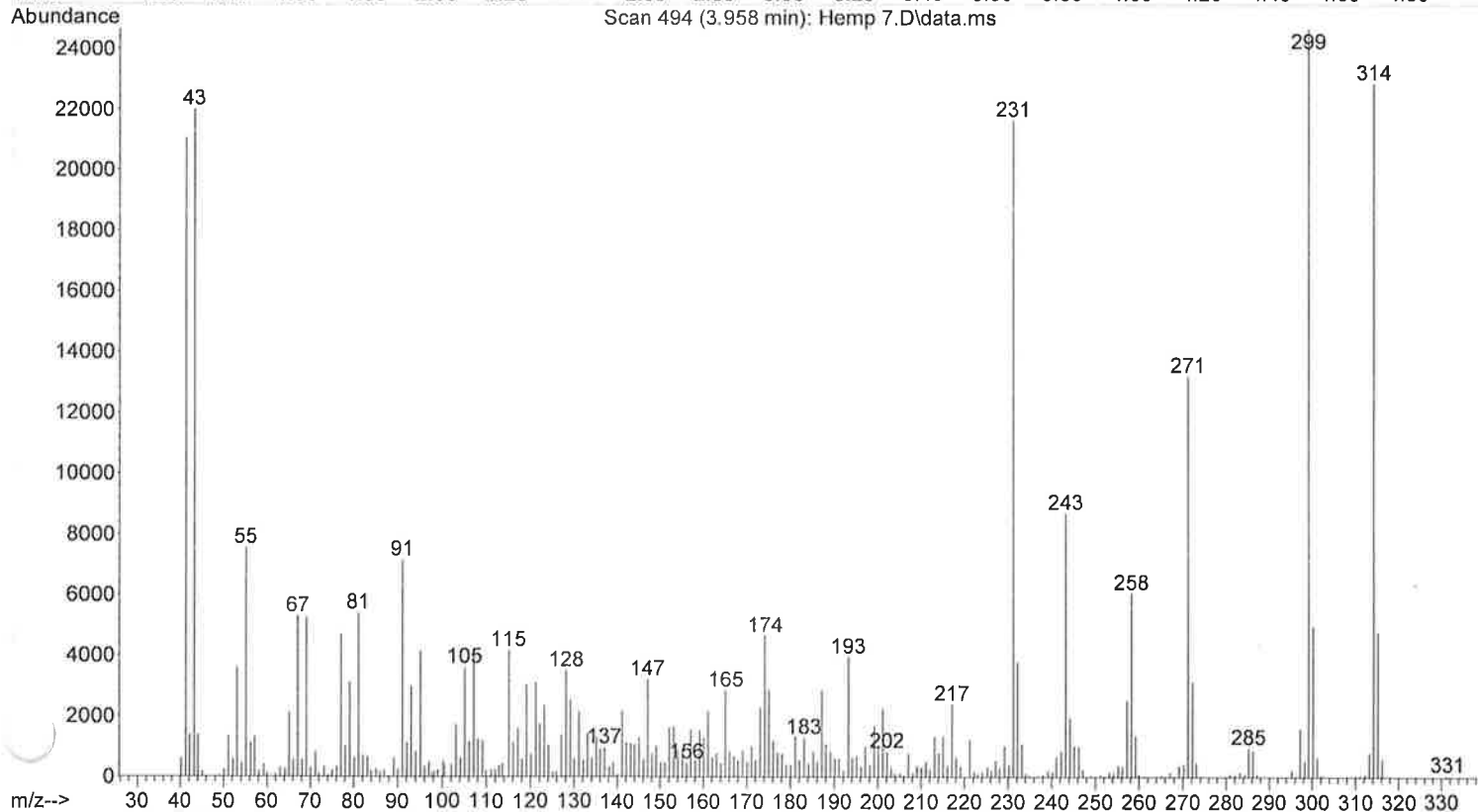
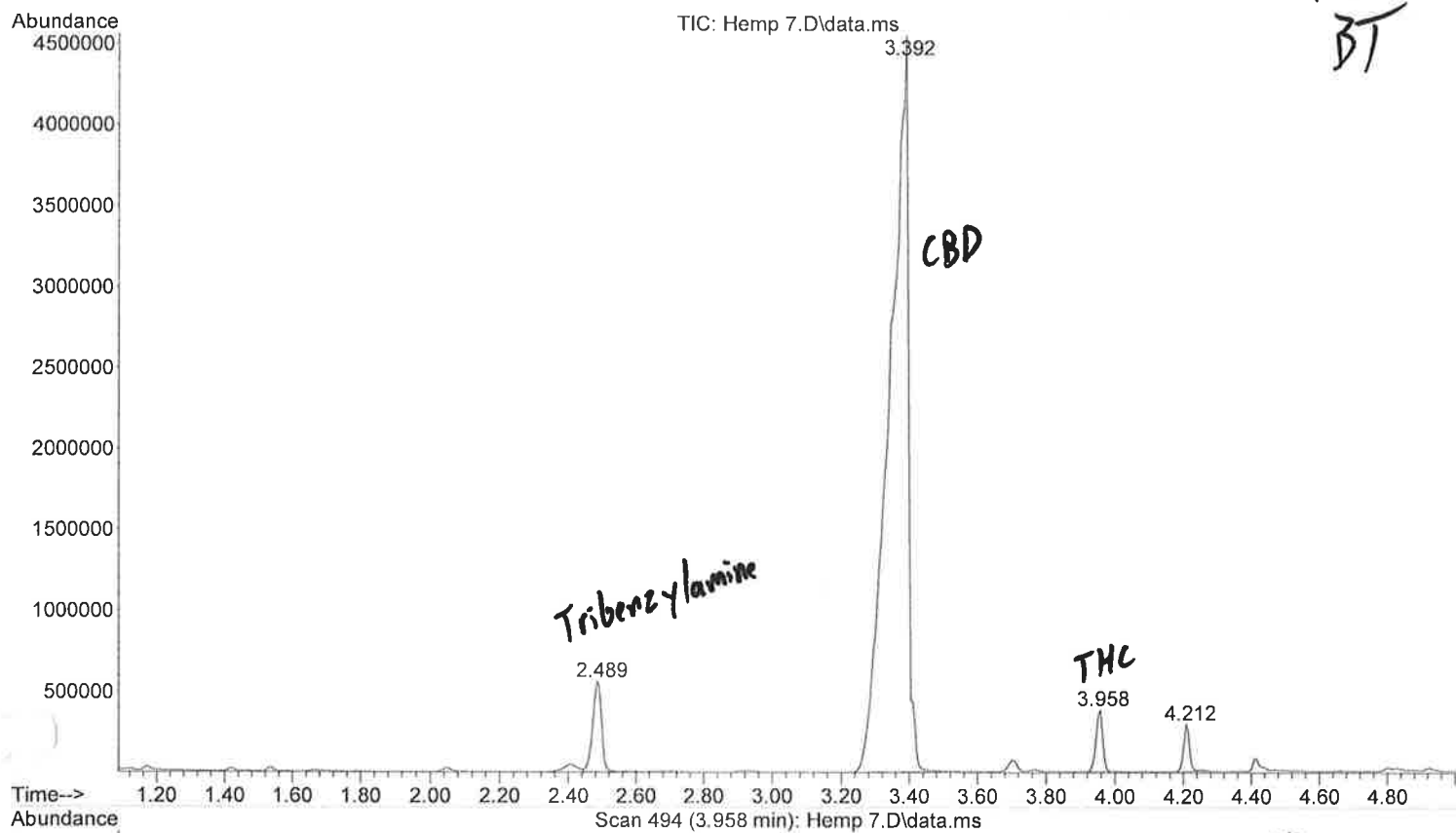
MSDRUGS100.M Fri Aug 16 09:53:35 2019

$$\frac{3687055}{7673195} = 0.481$$

8/16/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 7.D
Operator : BTT
Acquired : 15 Aug 2019 15:33 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 34

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 7.D
Acq On : 15 Aug 2019 15:33
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 34 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 7.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.489	234	242	253	VB	551578	10003699	5.73%	5.179%
2	3.392	367	397	423	BB	4251433	174581168	100.00%	90.390%
3	3.958	487	494	505	BB	372642	5029427	2.88%	2.604%
4	4.212	531	538	549	BB	281632	3528165	2.02%	1.827%

Sum of corrected areas: 193142460

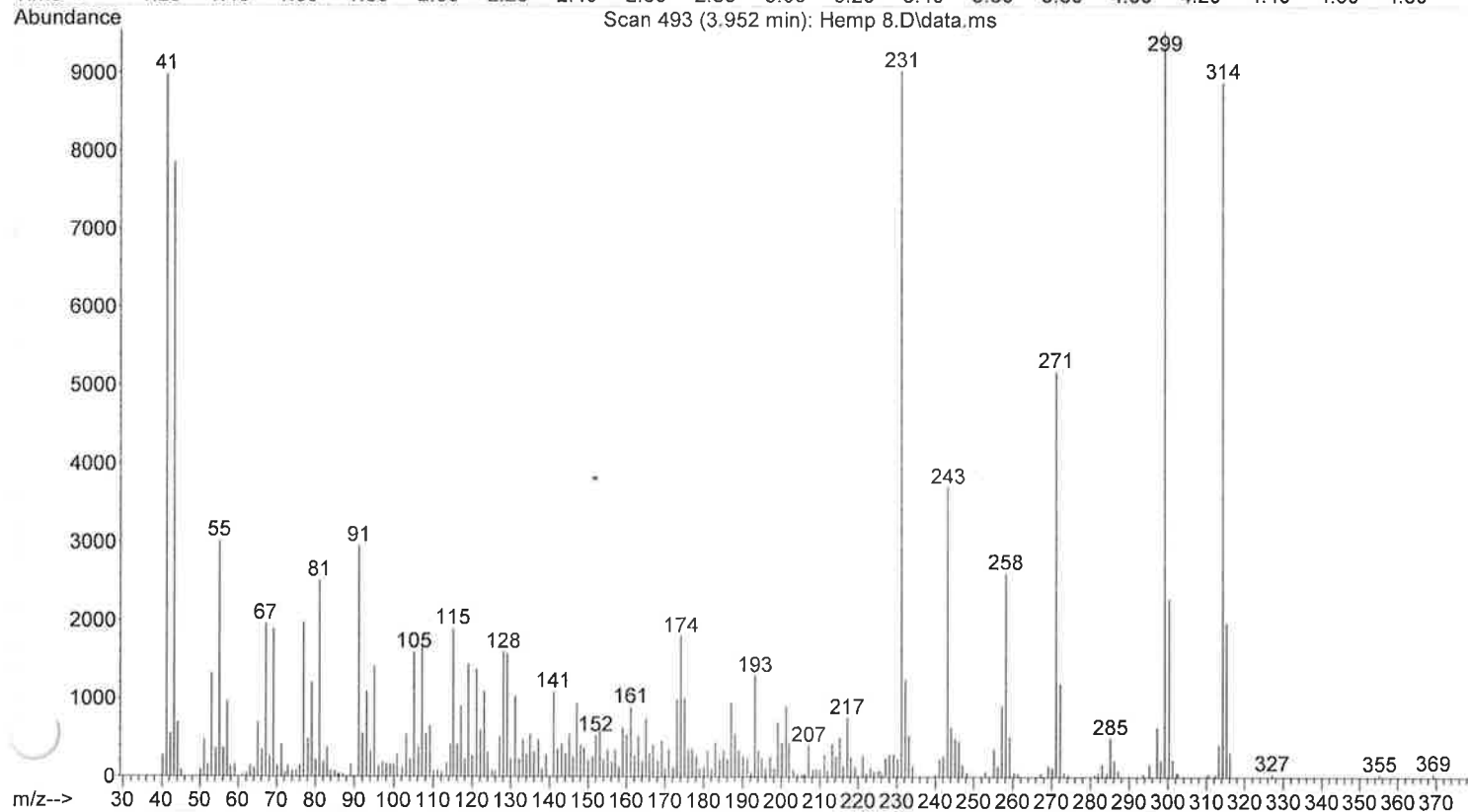
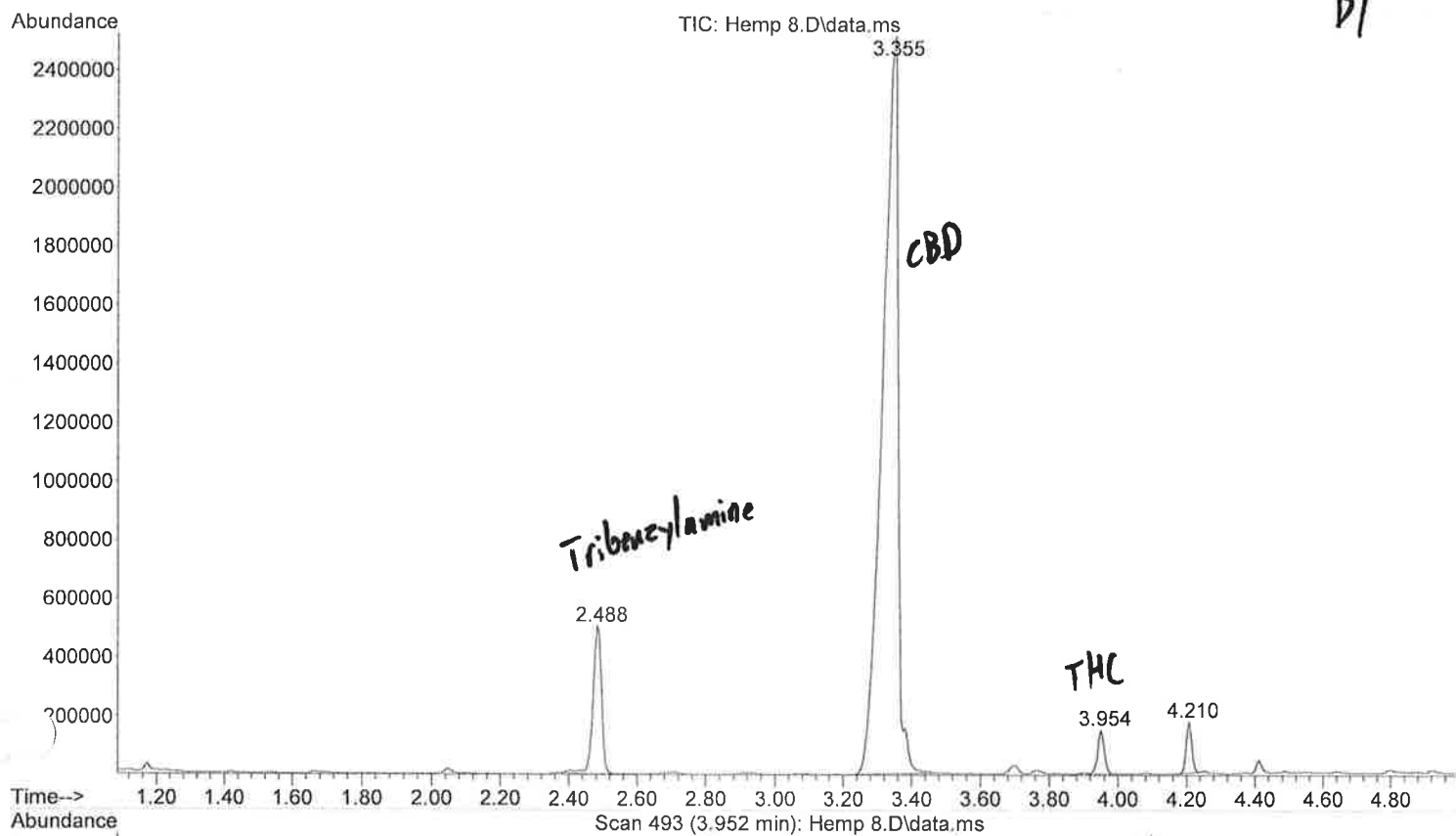
MSDRUGS100.M Fri Aug 16 09:54:19 2019

$$\frac{5029427}{10003699} = 0.503$$

8/16/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 8.D
Operator : BTT
Acquired : 15 Aug 2019 15:56 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 35

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 8.D
Acq On : 15 Aug 2019 15:56
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 35 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 8.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.488	219	242	253	BB	497478	8810857	11.00%	9.487%
2	3.355	369	391	413	BB	2544821	80092845	100.00%	86.237%
3	3.954	479	493	502	BB	144362	2009332	2.51%	2.163%
4	4.210	530	537	543	BV	166664	1962228	2.45%	2.113%

Sum of corrected areas: 92875262

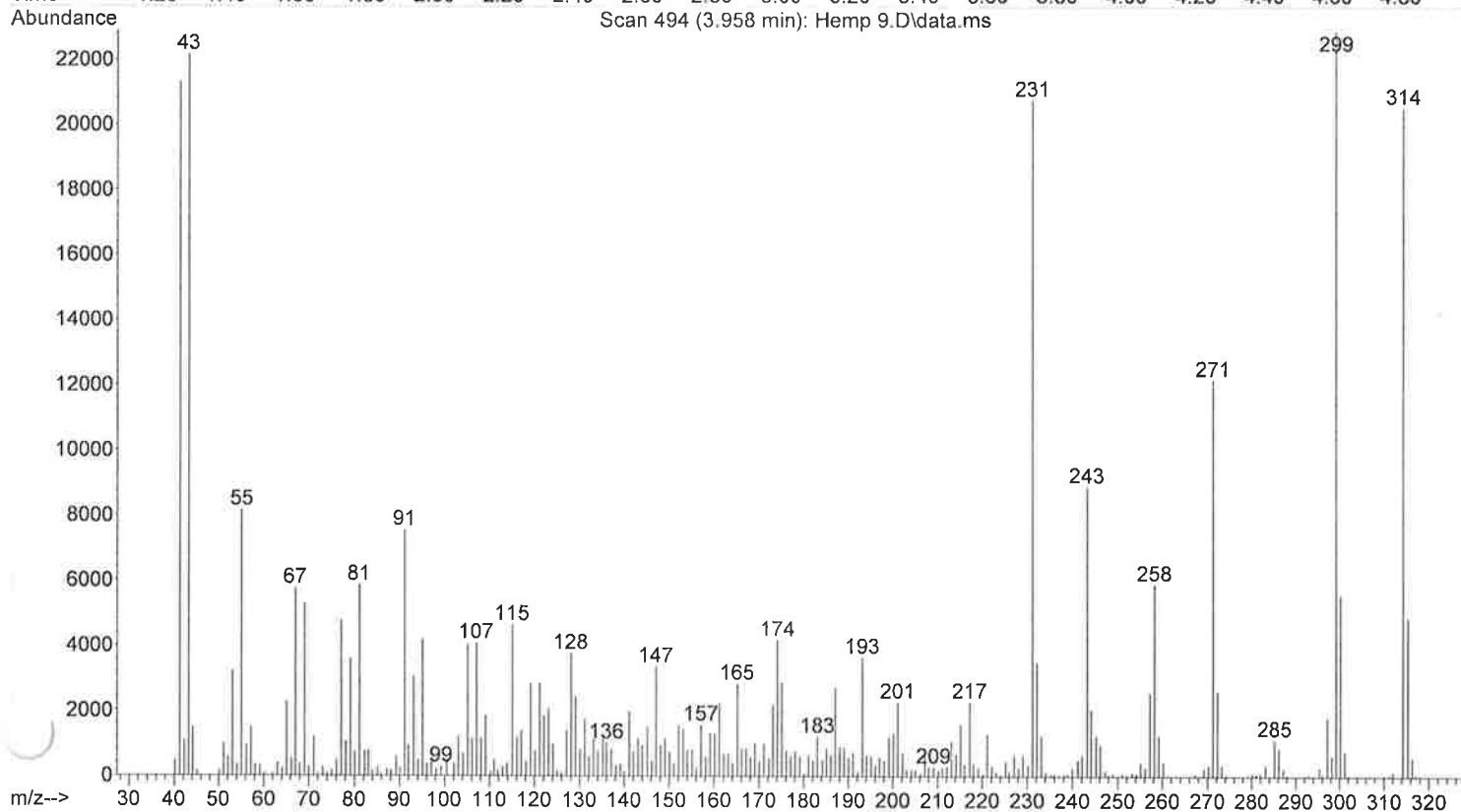
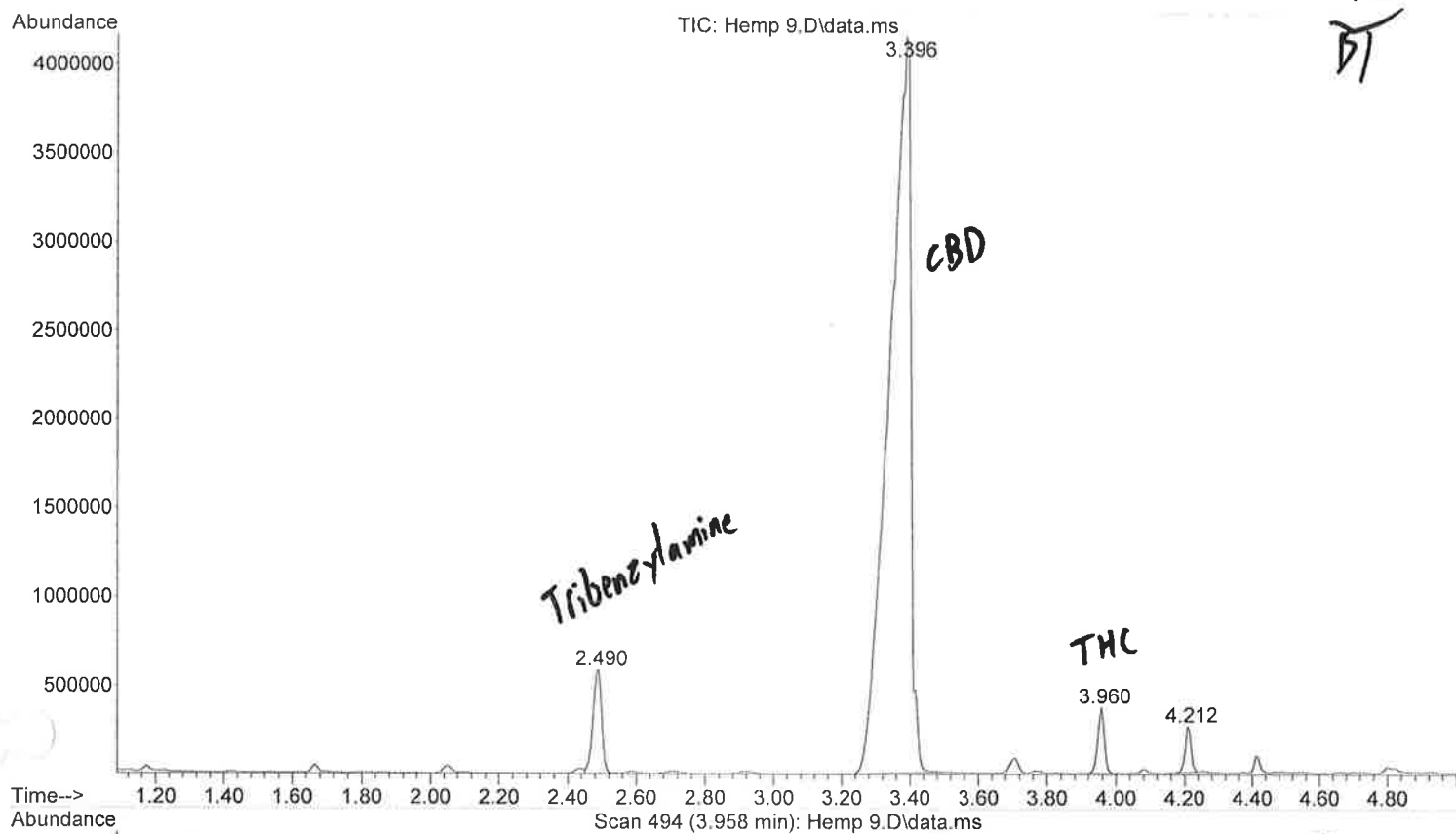
MSDRUGS100.M Fri Aug 16 09:54:47 2019

$$\frac{2009332}{8810857} = 0.228$$

8/16/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\Hemp 9.D
Operator : BTT
Acquired : 15 Aug 2019 16:20 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 36

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 9.D
Acq On : 15 Aug 2019 16:20
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 36 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 9.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.490	235	242	253	VB	585895	10210629	5.60%	5.099%
2	3.396	367	398	415	BV	4137939	182221729	100.00%	91.004%
3	3.960	486	494	506	BB	352625	4779812	2.62%	2.387%
4	4.212	525	538	543	BV	255355	3022572	1.66%	1.510%

Sum of corrected areas: 200234742

MSDRUGS100.M Fri Aug 16 09:55:12 2019

$$\frac{4779812}{10210629} = 0.468$$

8/16/19
BT

Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : Hemp 10.D
Acq On : 15 Aug 2019 16:43
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 37 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Hemp 10.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.480	233	240	251	BB	484406	8068562	7.72%	6.736%
2	3.359	368	391	418	BB	3122369	104548909	100.00%	87.287%
3	3.952	485	493	502	BB	208838	2937385	2.81%	2.452%
4	4.209	531	537	550	BB	338112	4220700	4.04%	3.524%

Sum of corrected areas: 119775556

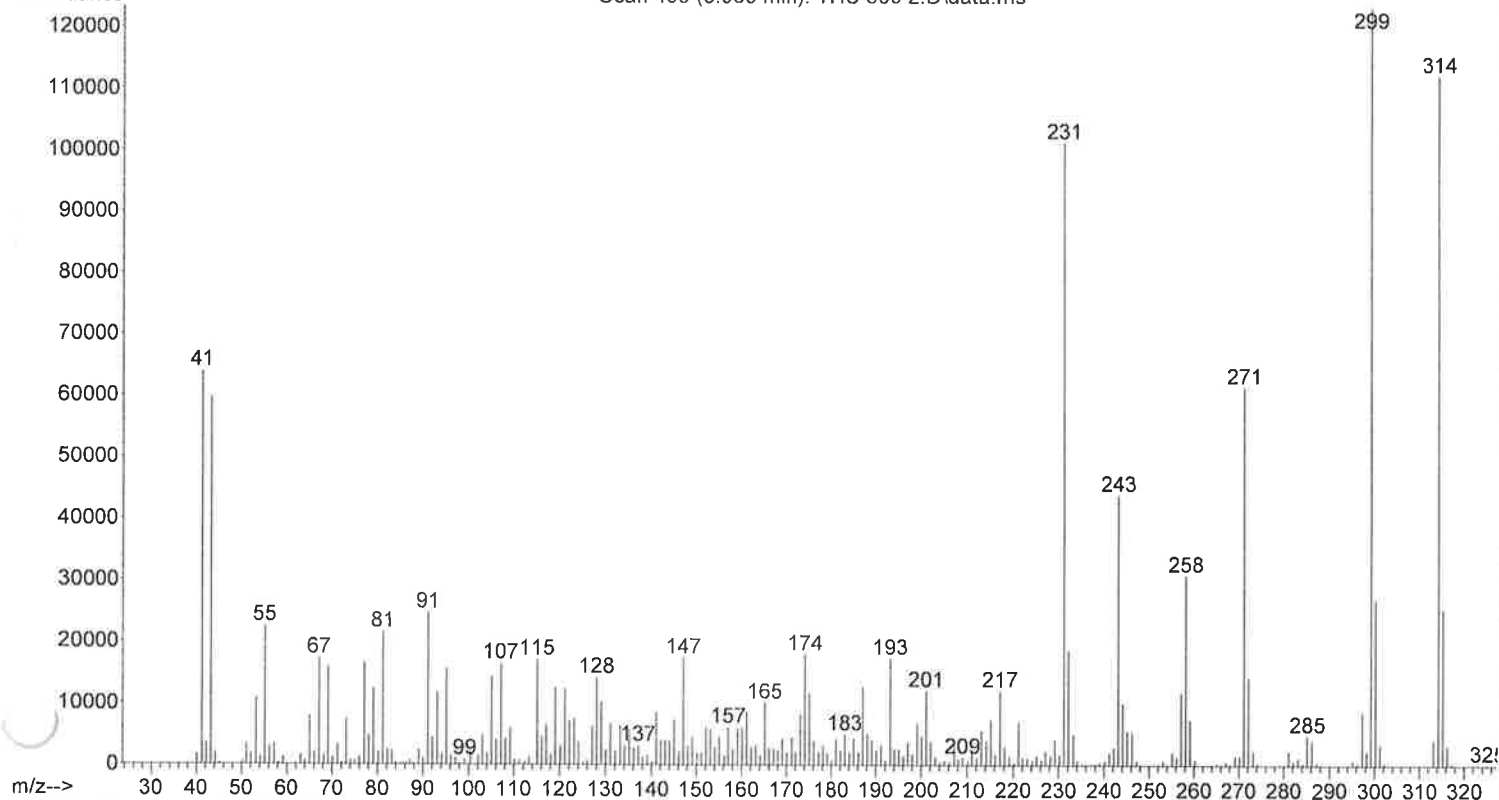
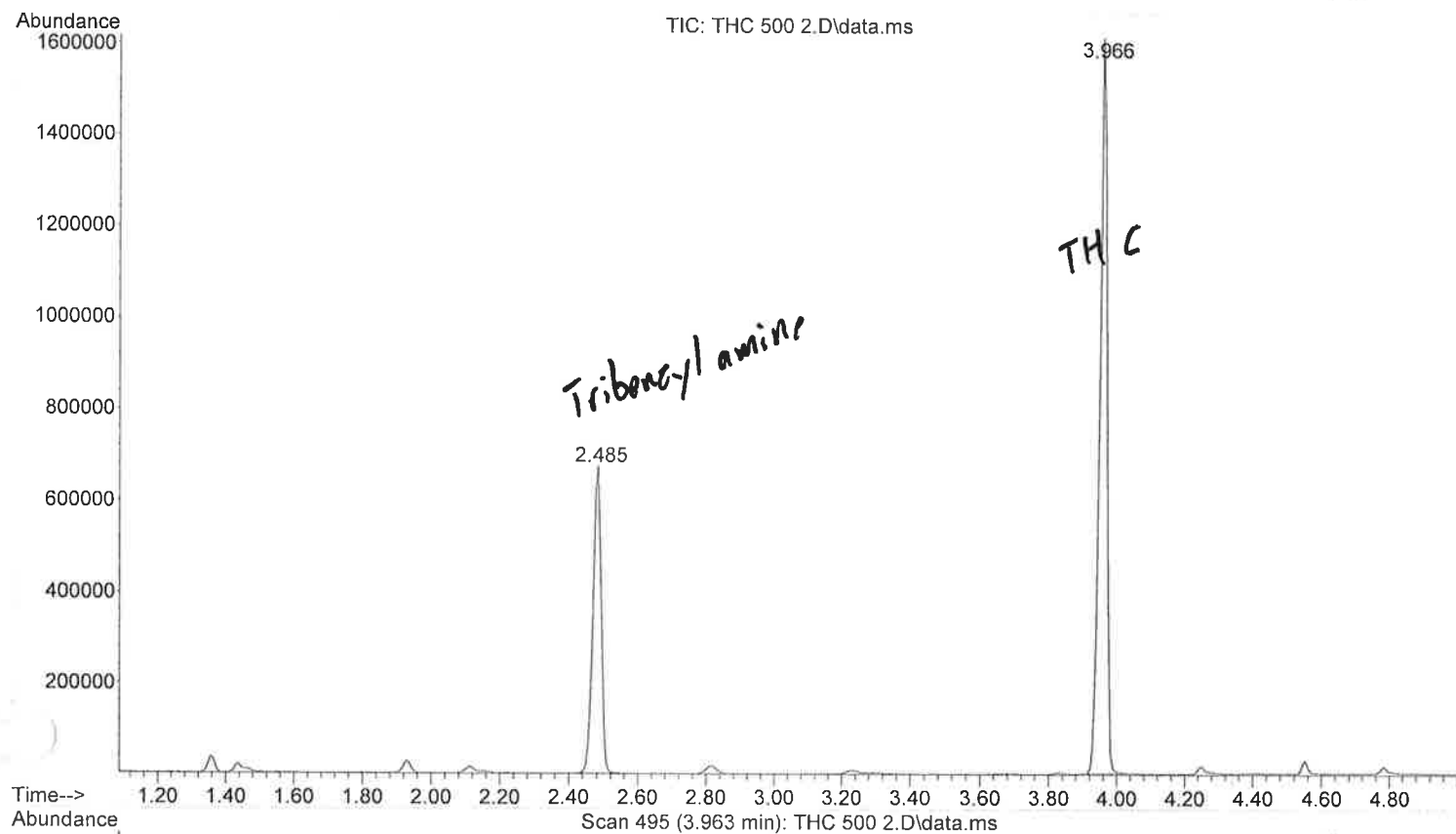
MSDRUGS100.M Fri Aug 16 09:55:38 2019

$$\frac{2937385}{8068562} = 0.364$$

8/16/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-14-19\THC 500 2.D
Operator : BTT
Acquired : 15 Aug 2019 17:07 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 27

8/16/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-14-19\
Data File : THC 500 2.D
Acq On : 15 Aug 2019 17:07
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.485	232	241	253	BB	651060	10855999	46.79%	31.877%
2	3.966	486	496	507	BB	1567974	23199601	100.00%	68.123%

Sum of corrected areas: 34055600

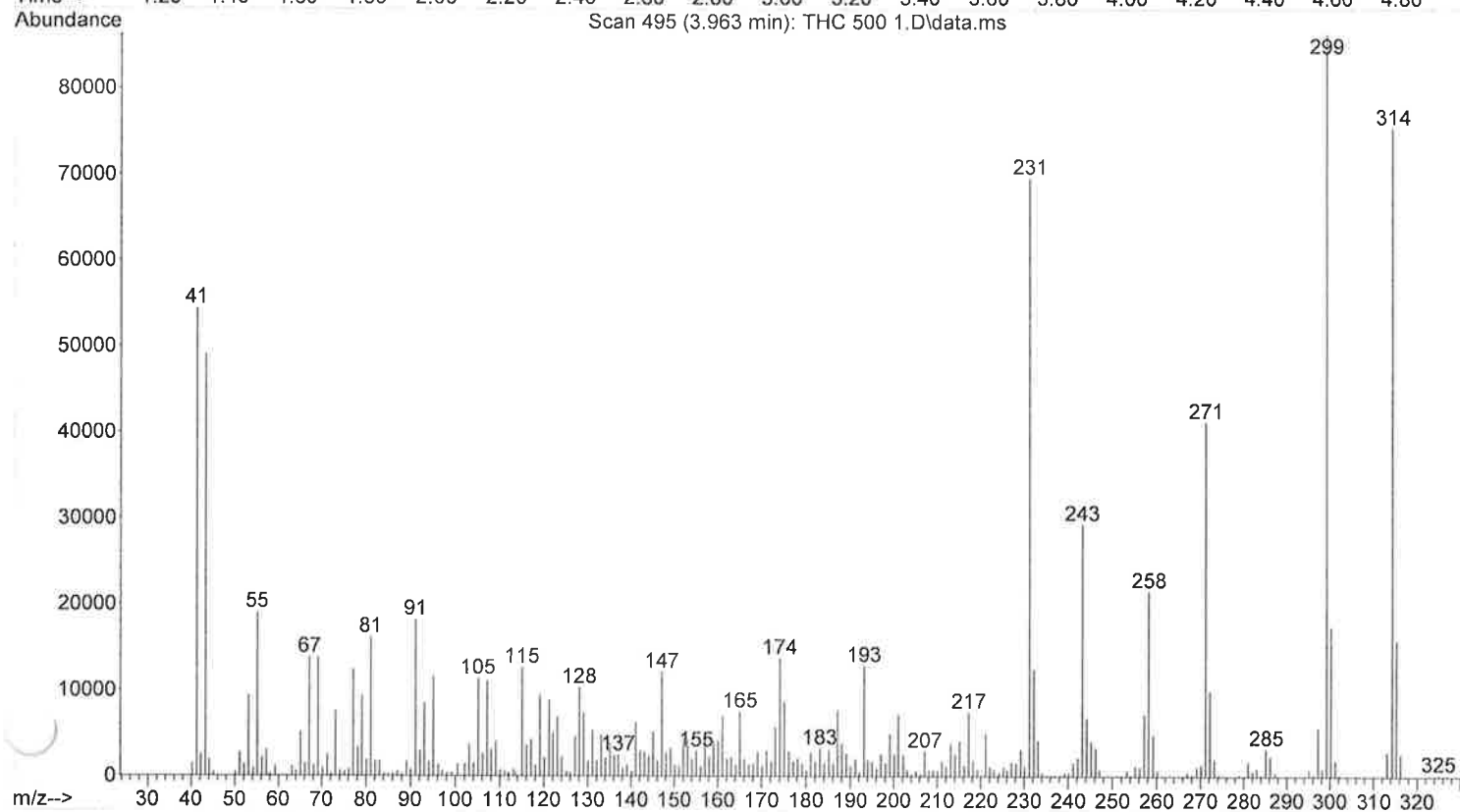
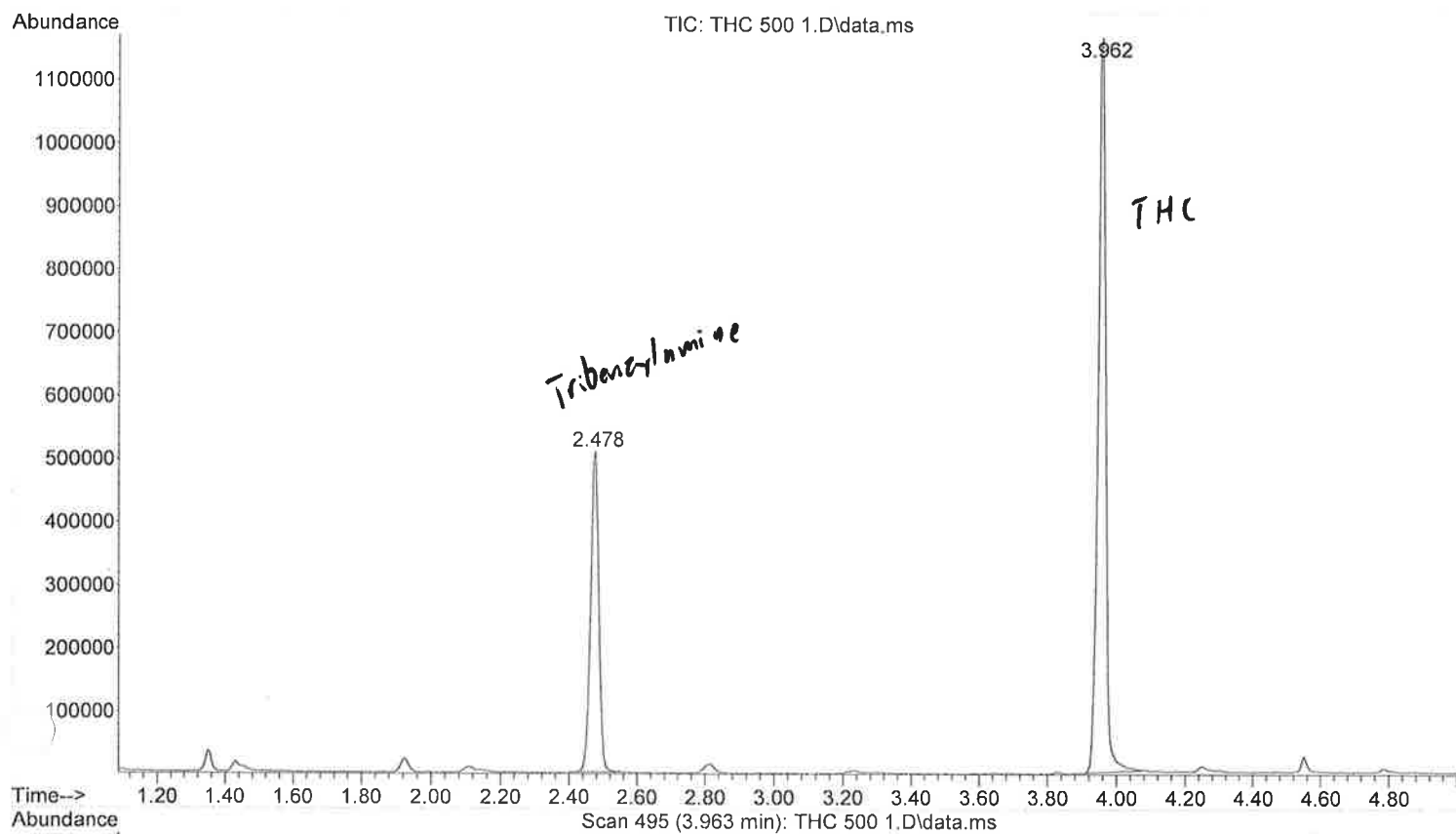
MSDRUGS100.M Fri Aug 16 09:56:14 2019

$$\frac{23199601}{10855999} = \text{BT} \quad 2.137$$

8/16/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\THC 500 1.D
Operator : BTT
Acquired : 20 Aug 2019 9:57 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 27

6/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : THC 500 1.D
Acq On : 20 Aug 2019 9:57
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 27 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.478	230	240	253	BB	506435	8454820	48.20%	32.522%
2	3.962	485	495	514	BB	1169987	17542462	100.00%	67.478%

Sum of corrected areas: 25997282

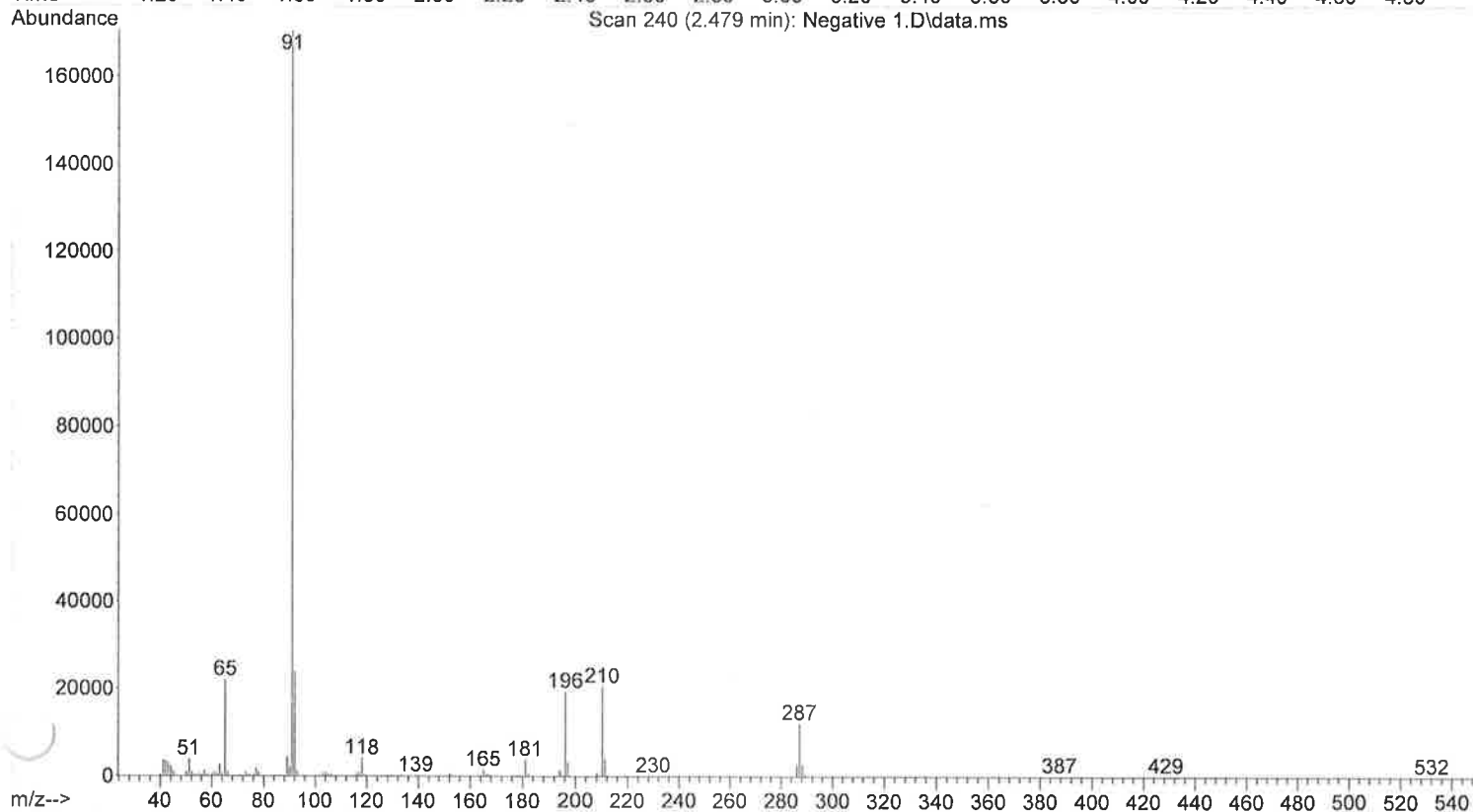
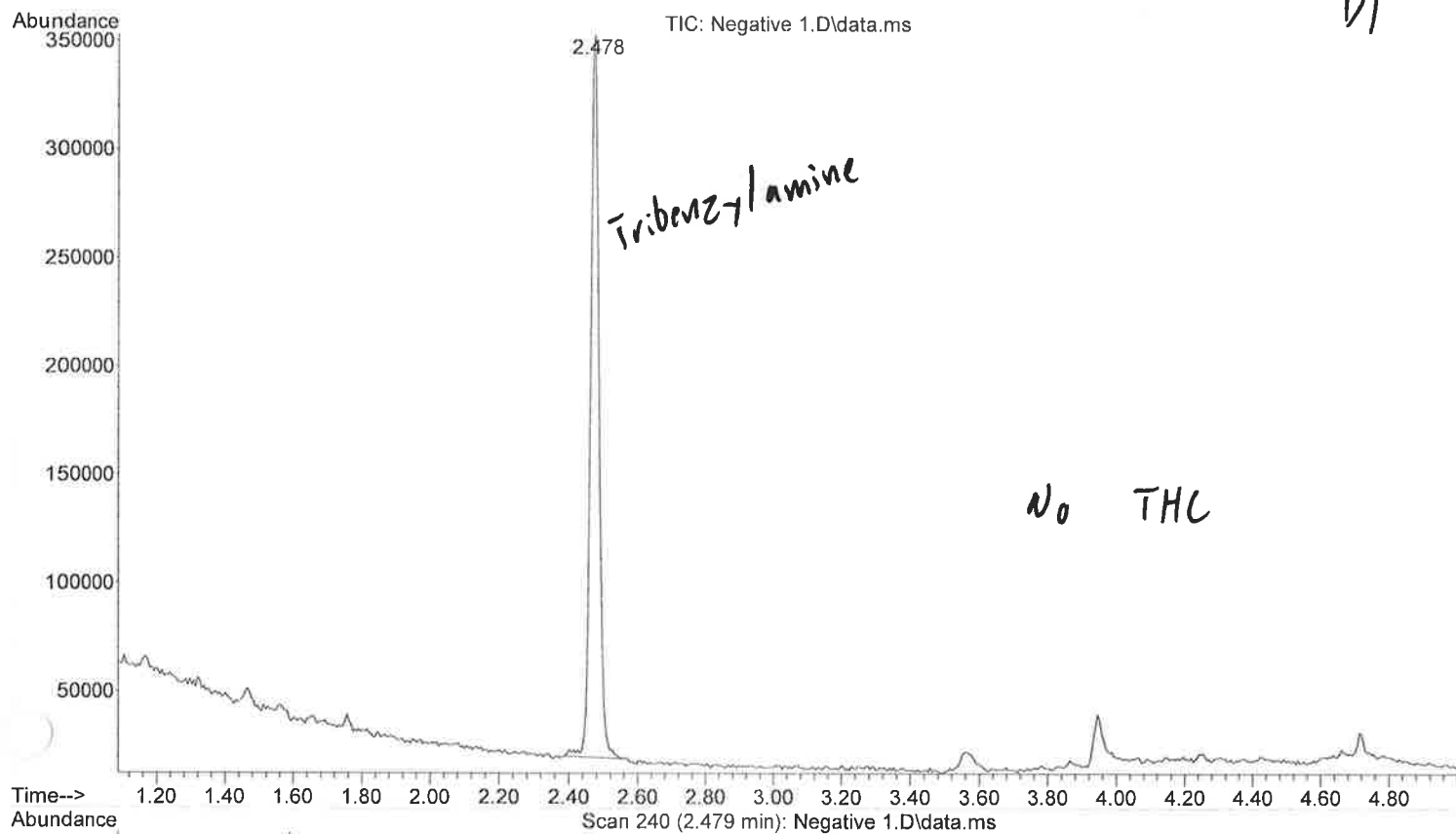
MSDRUGS100.M Tue Aug 20 12:51:19 2019

$$\frac{17542462}{8454820} = 2.075$$

8/21/19
BT

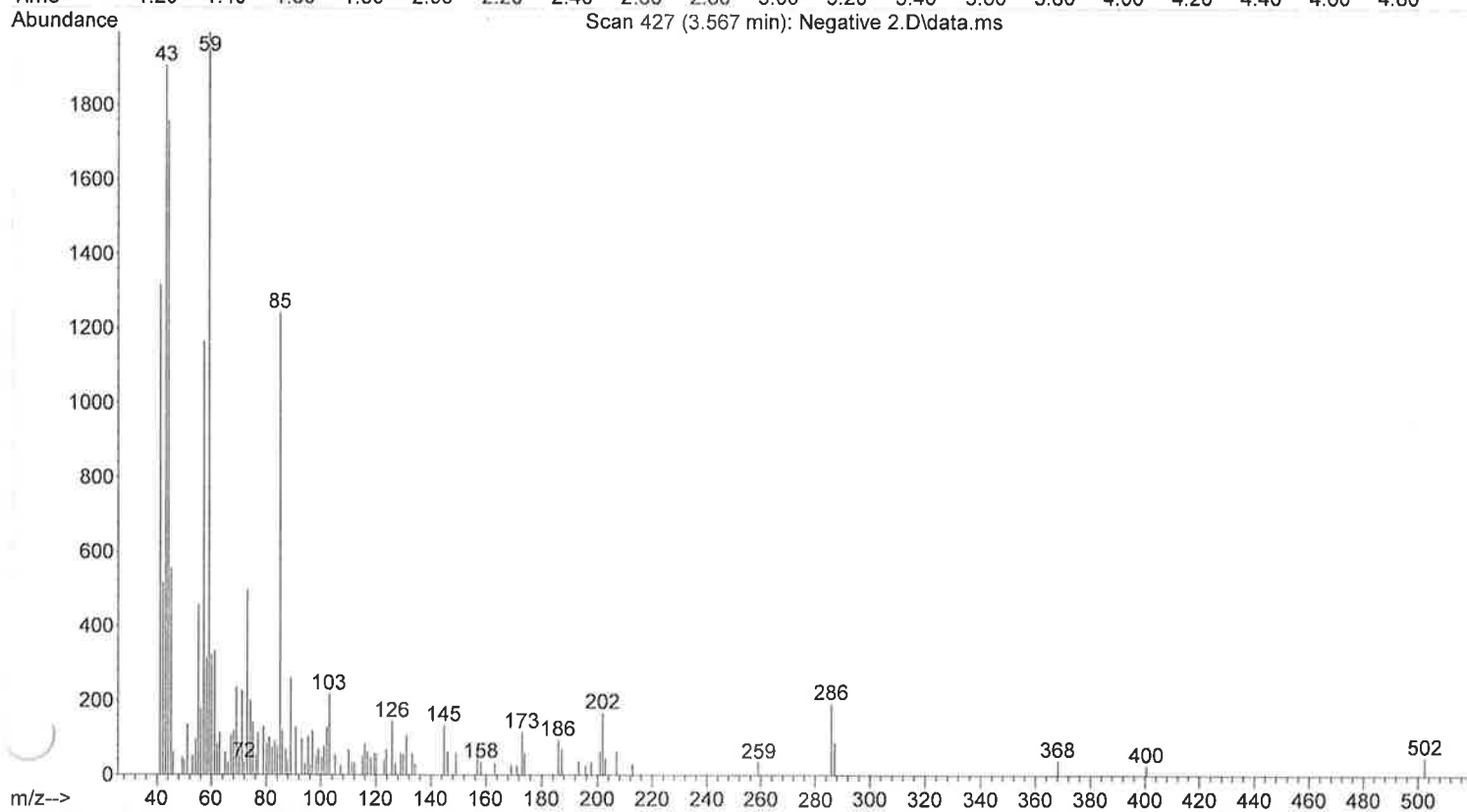
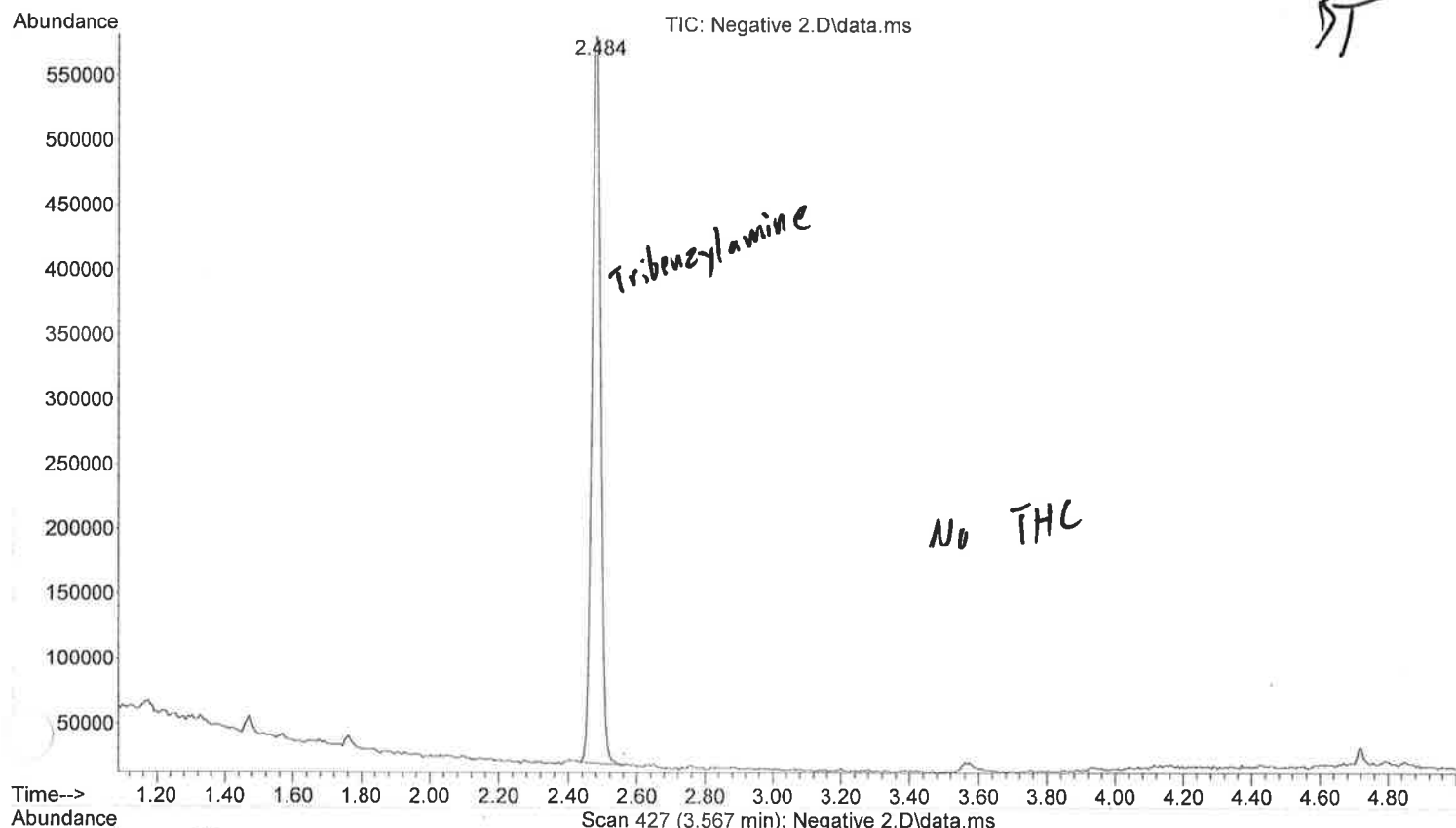
File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Negative 1.D
Operator : BTT
Acquired : 20 Aug 2019 10:21 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 28

8/21/19
BT



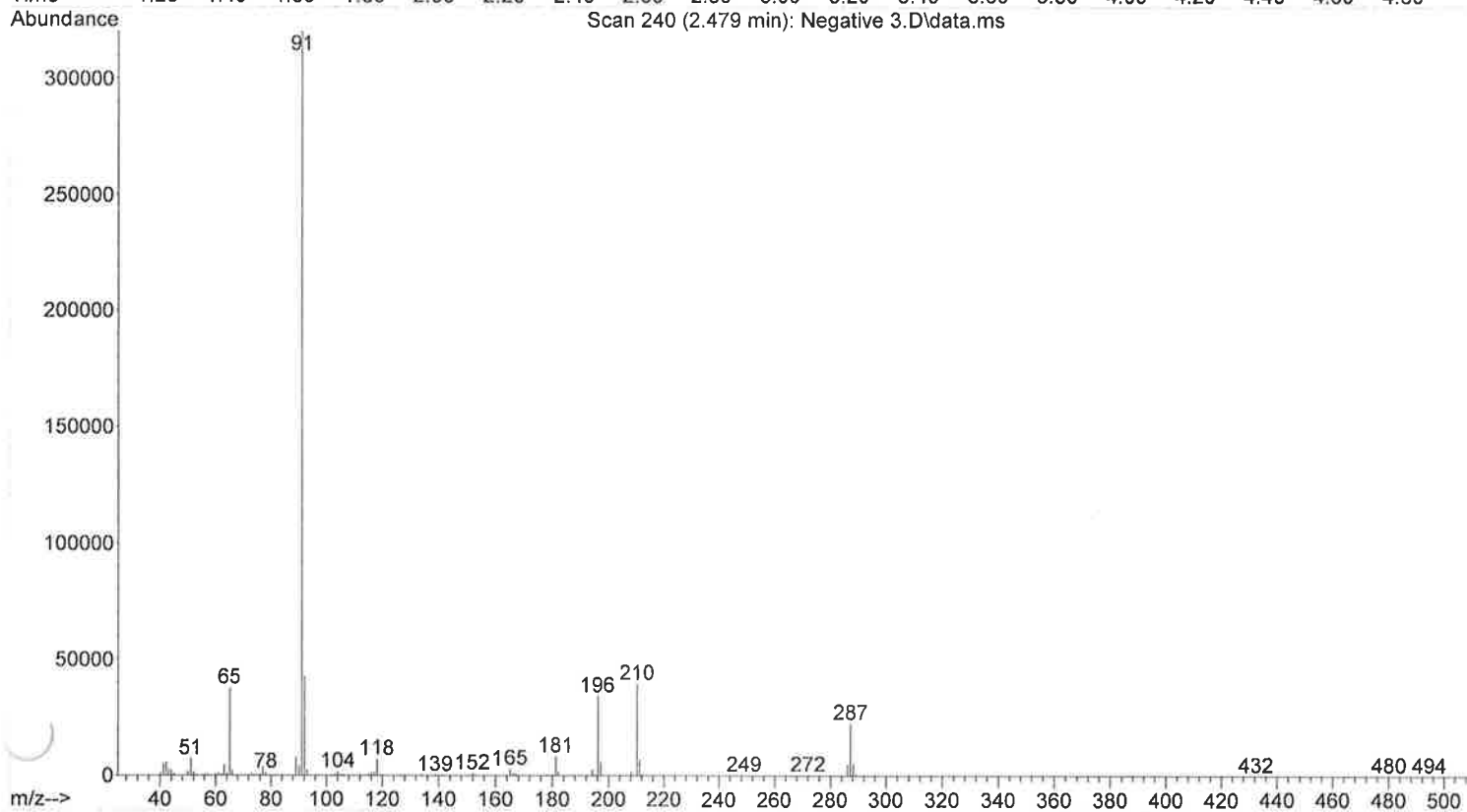
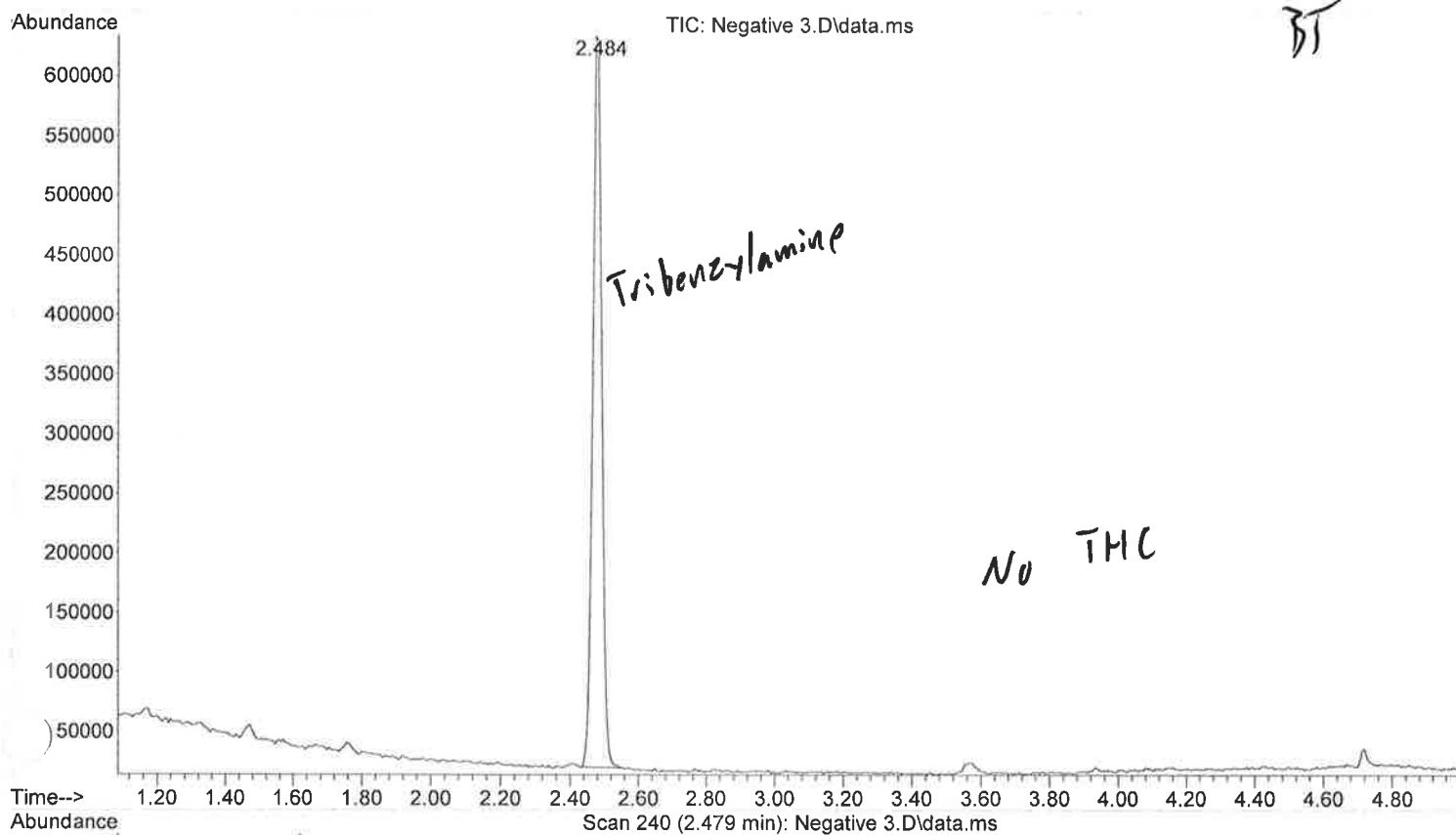
File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Negative 2.D
Operator : BTT
Acquired : 20 Aug 2019 10:44 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 29

8/21/19
BT



File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Negative 3.D
Operator : BTT
Acquired : 20 Aug 2019 11:08 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 30

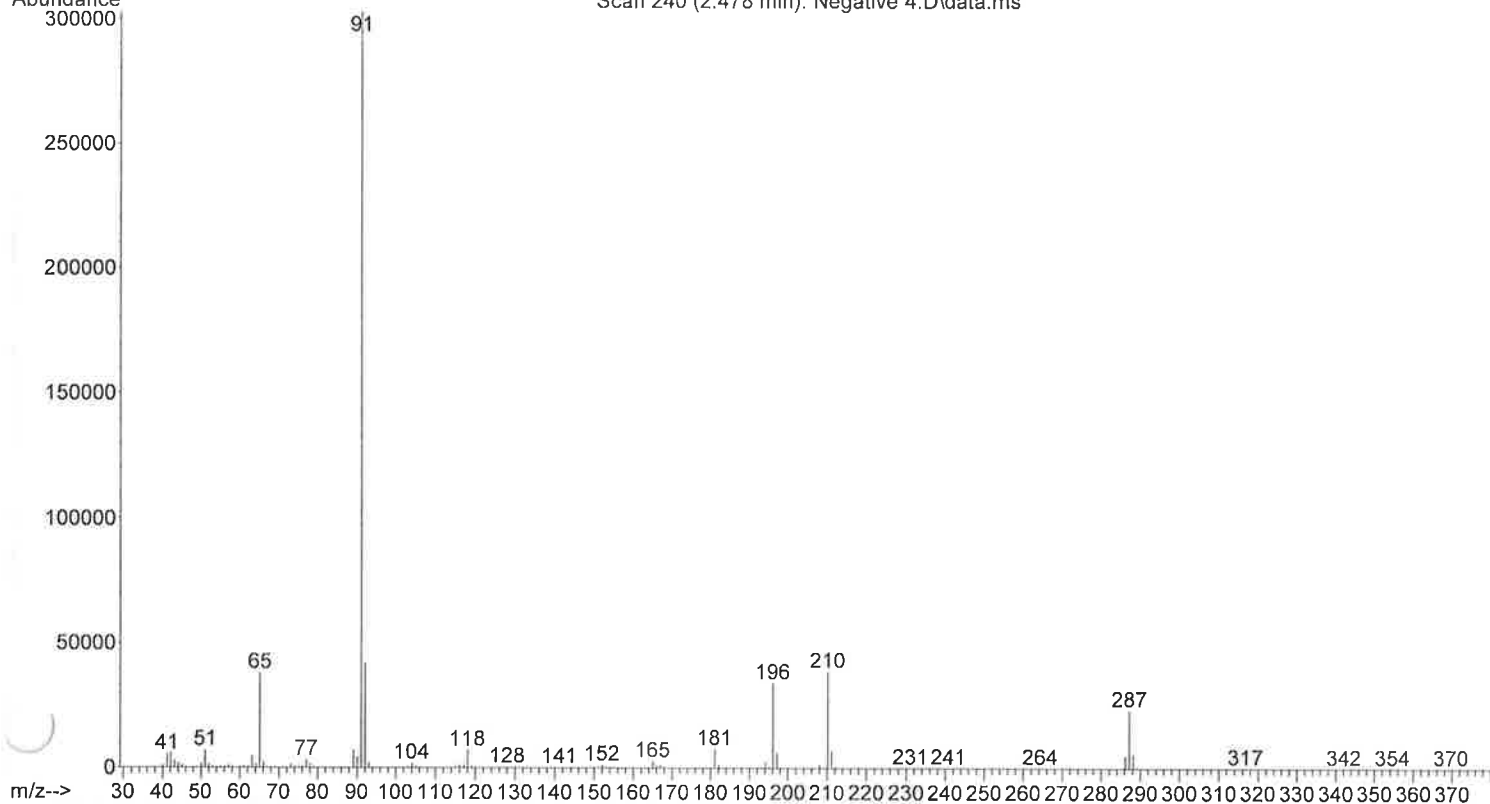
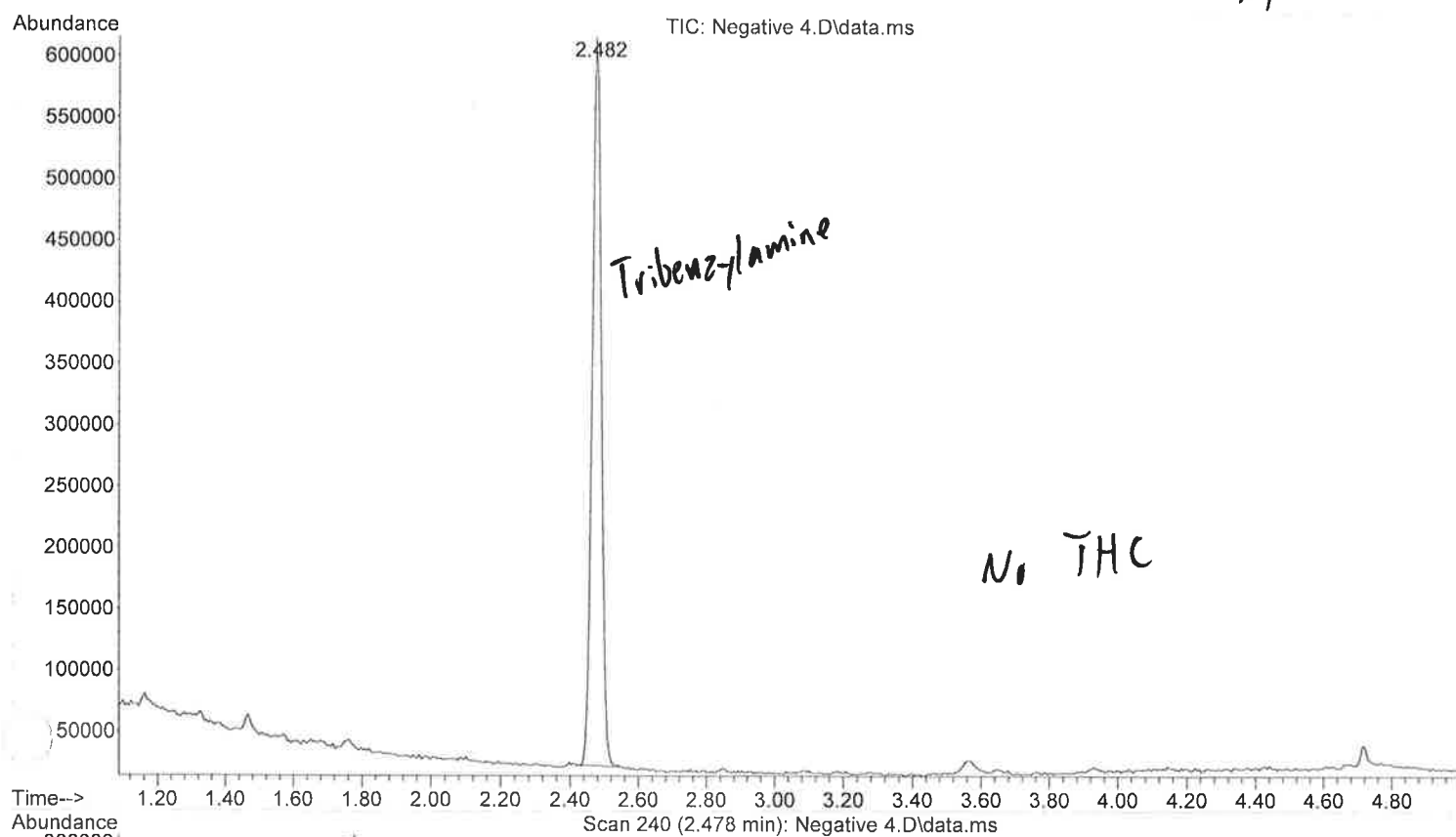
8/21/19
BT



File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Negative 4.D
Operator : BTT
Acquired : 20 Aug 2019 11:31 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 31

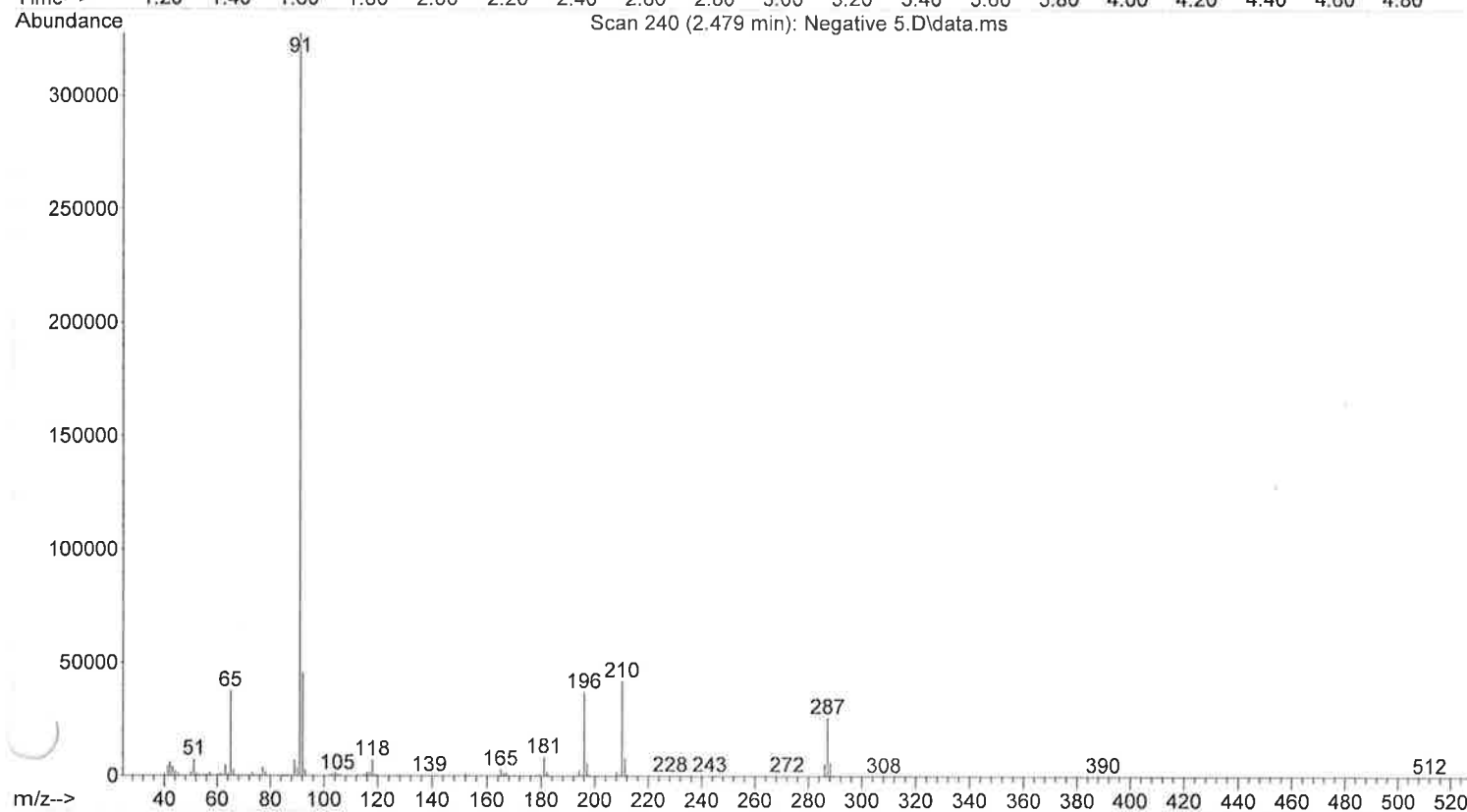
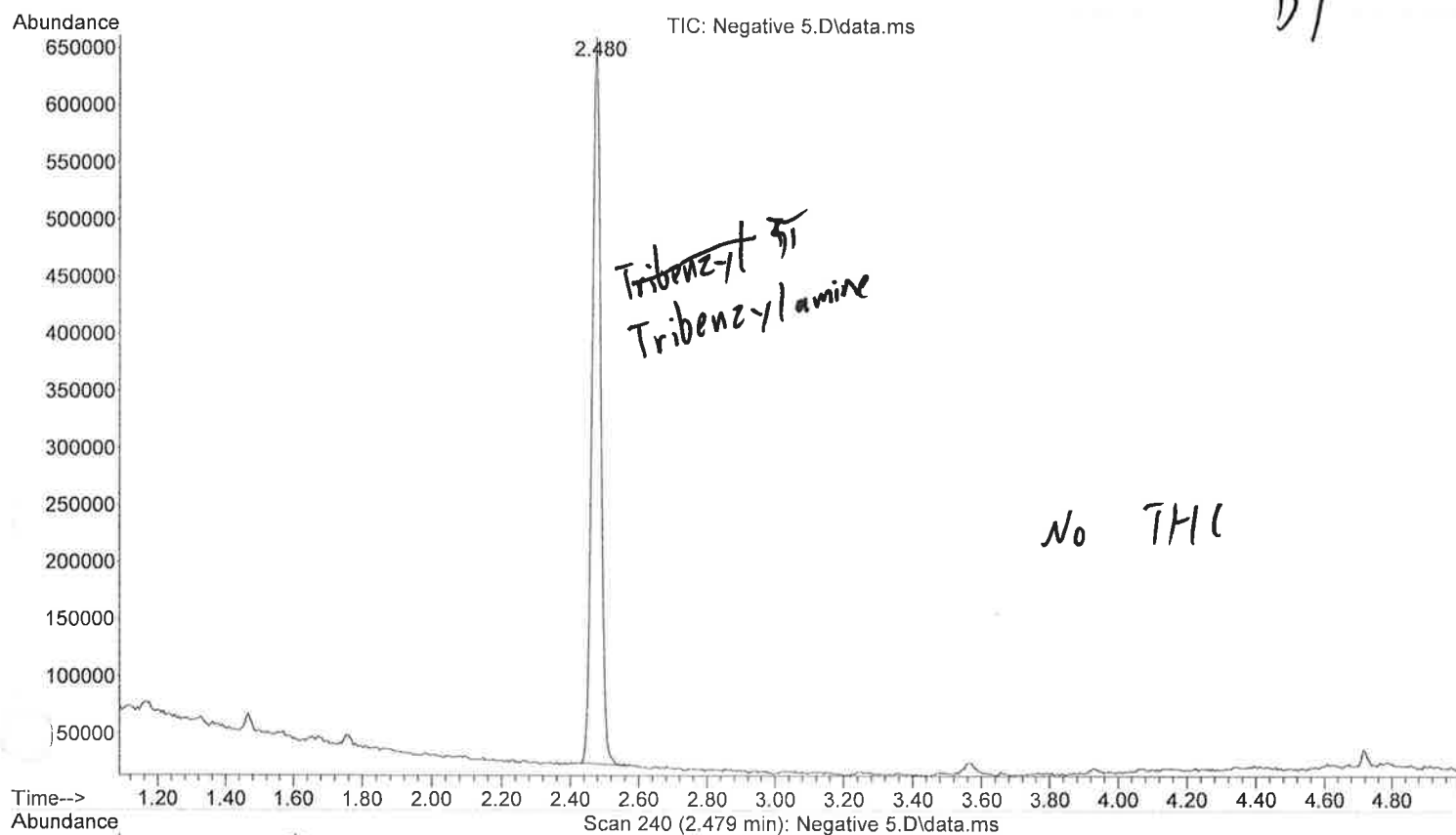
8/21/19

BT



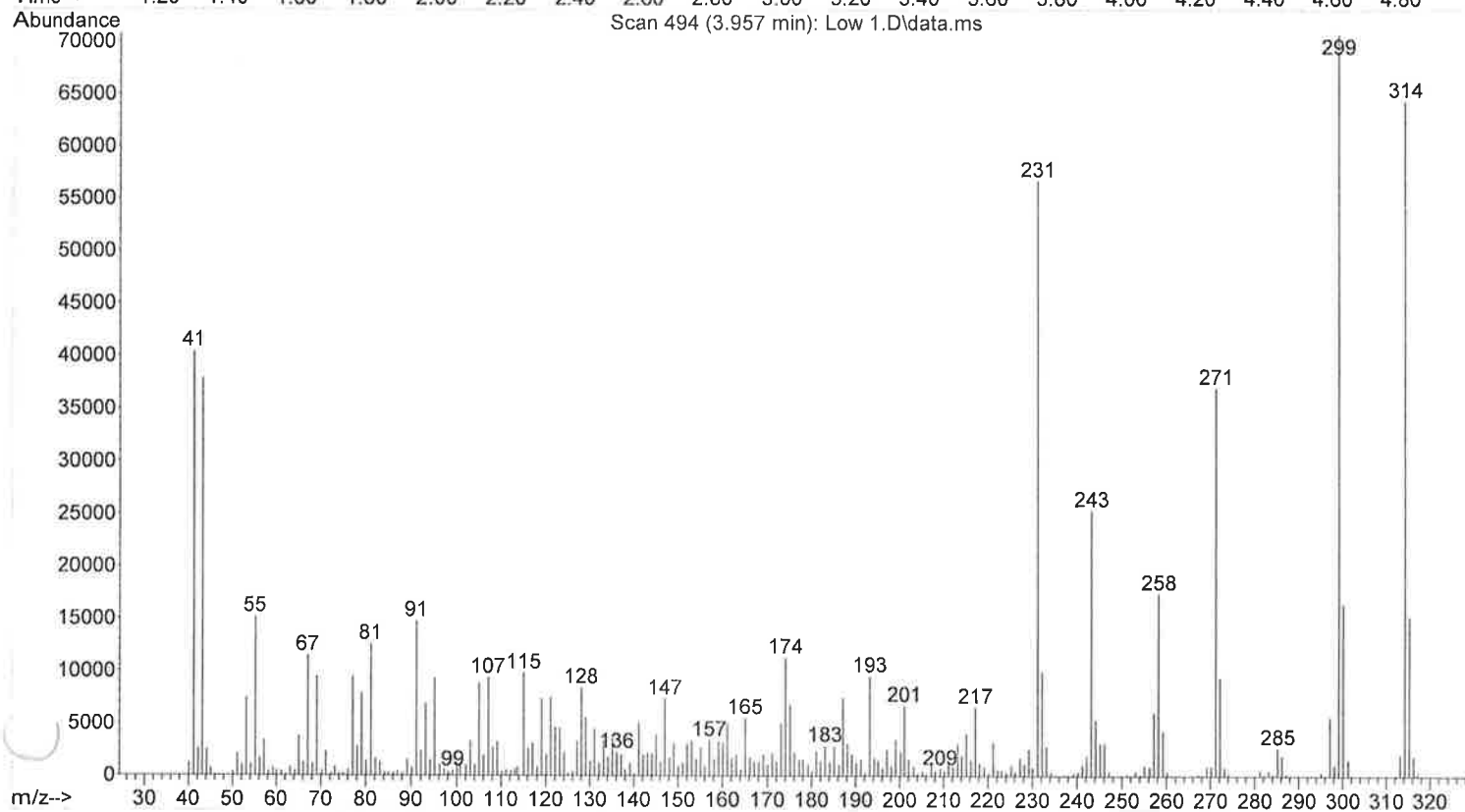
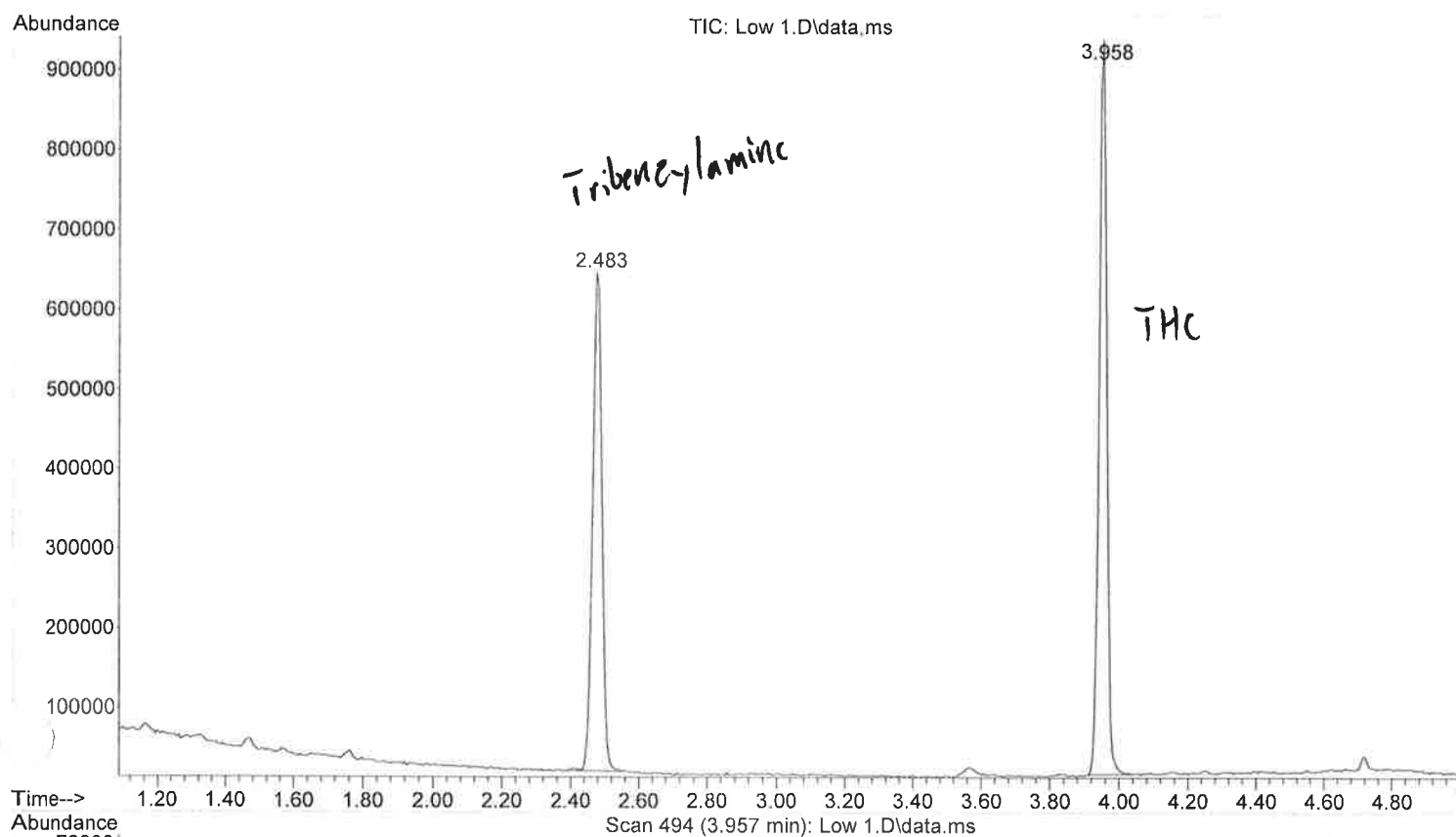
File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Negative 5.D
Operator : BTT
Acquired : 20 Aug 2019 11:54 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 32

8/21/19
BT



File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Low 1.D
Operator : BTT
Acquired : 20 Aug 2019 12:18 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 33

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : Low 1.D
Acq On : 20 Aug 2019 12:18
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 33 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Low 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.483	224	241	253	BB	620413	11615152	82.45%	45.192%
2	3.958	486	494	508	BB	910146	14086901	100.00%	54.808%

Sum of corrected areas: 25702053

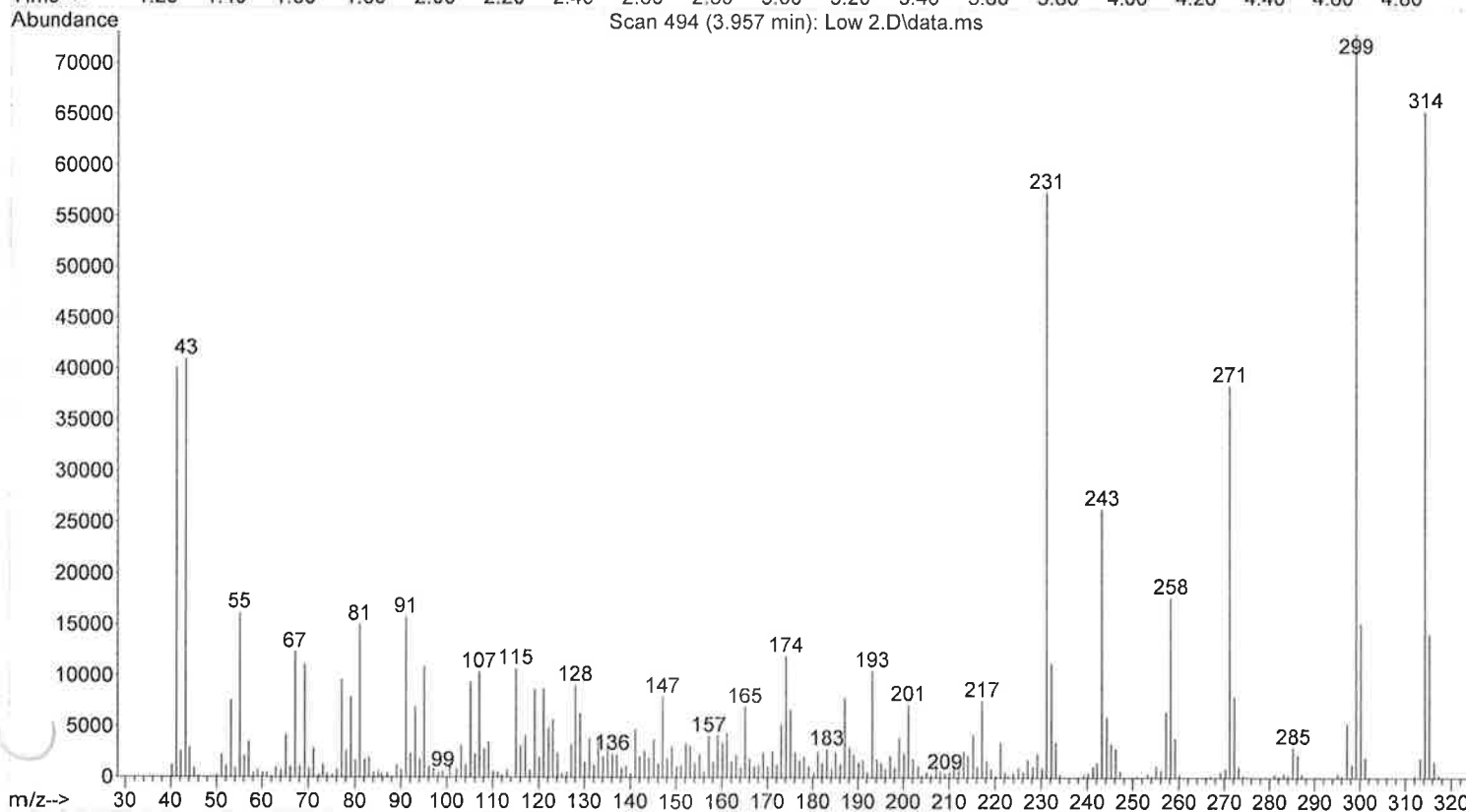
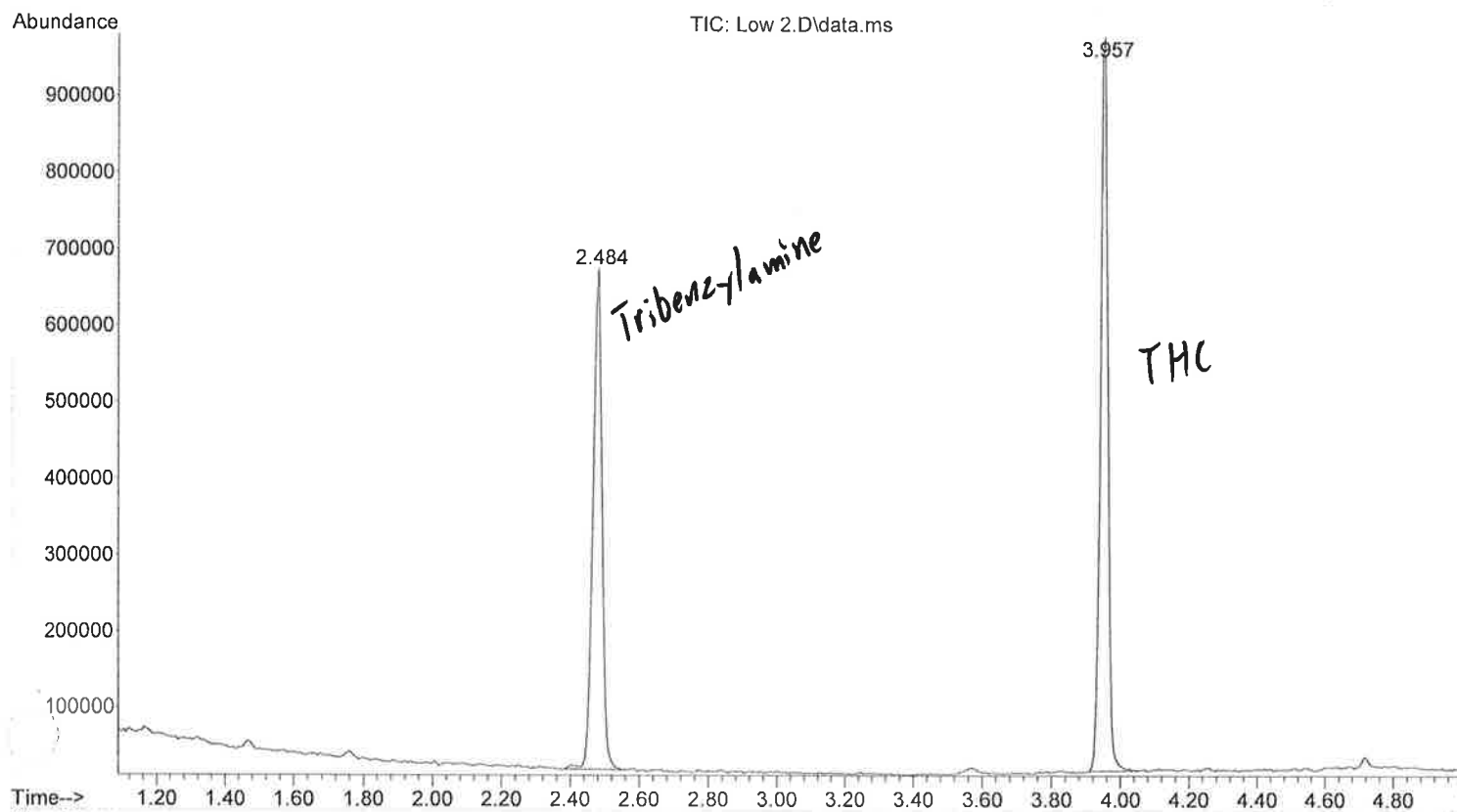
MSDRUGS100.M Tue Aug 20 14:48:52 2019

$$\frac{14086901}{11615152} = 1.213$$

8/21/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Low 2.D
Operator : BTT
Acquired : 20 Aug 2019 12:41 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 34

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : Low 2.D
Acq On : 20 Aug 2019 12:41
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 34 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Low 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.484	223	241	255	BB	635447	11902692	82.11%	45.087%
2	3.957	485	494	510	BB	965664	14496797	100.00%	54.913%

Sum of corrected areas: 26399489

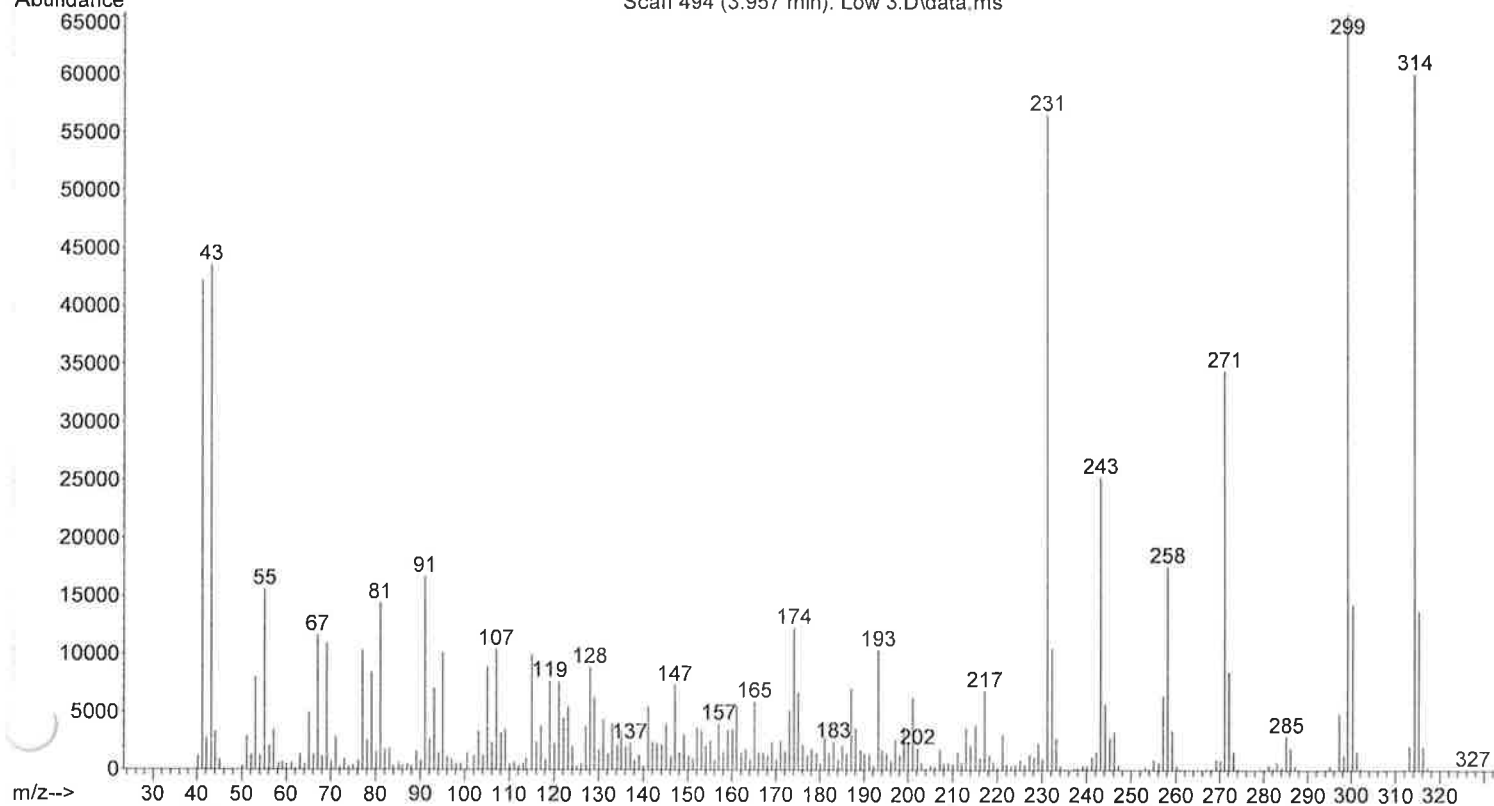
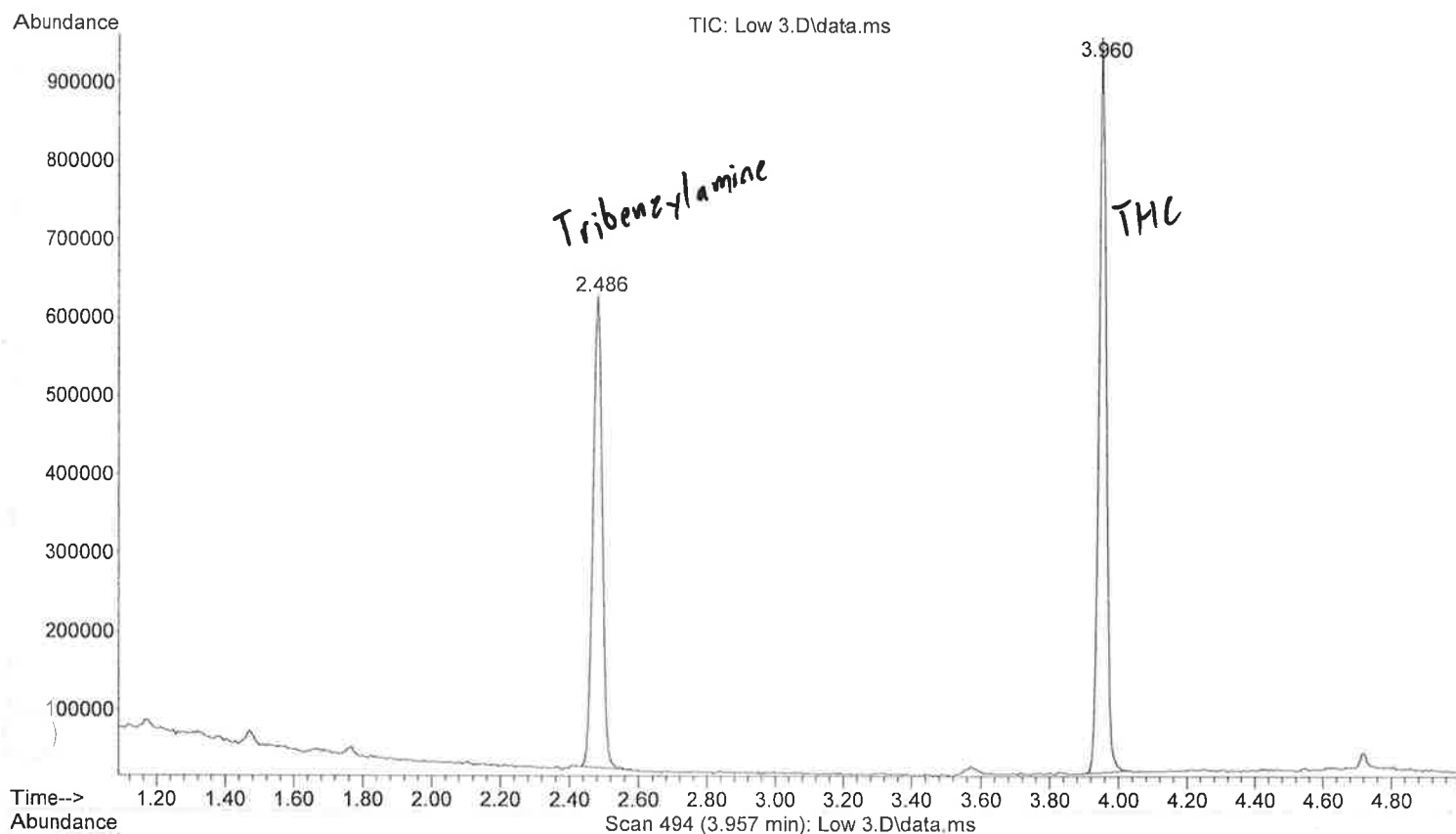
MSDRUGS100.M Tue Aug 20 14:49:22 2019

8/21/19
BT

$$\frac{14496797}{11902692} = 1.218$$

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Low 3.D
Operator : BTT
Acquired : 20 Aug 2019 13:05 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Mr fo : Methanol
Vial number: 35

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : Low 3.D
Acq On : 20 Aug 2019 13:05
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 35 Sample Multiplier: 1

8/21/19
BT

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Low 3.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.486	232	241	257	BB	590608	11234162	81.47%	44.895%
2	3.960	482	494	507	BB	898362	13789068	100.00%	55.105%

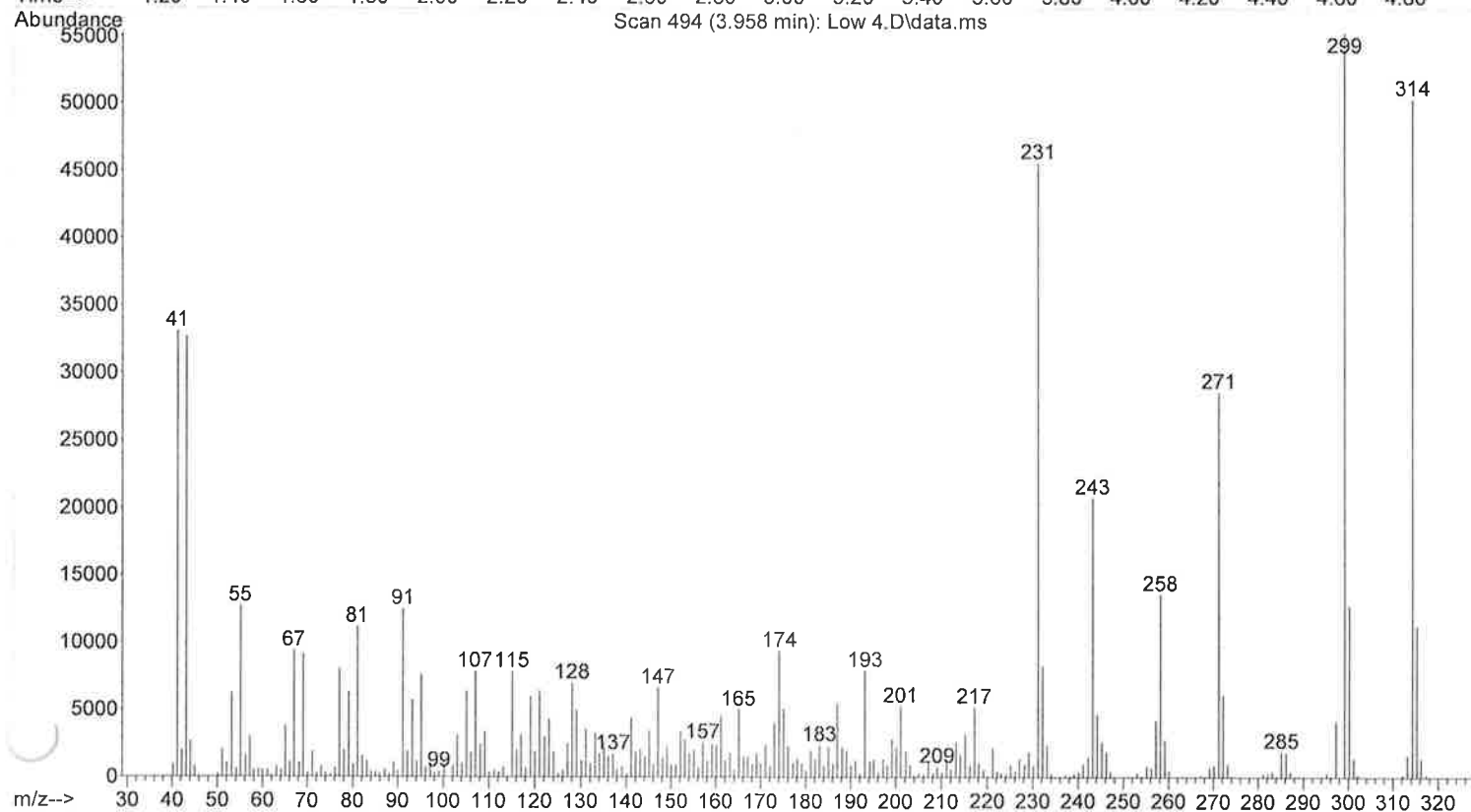
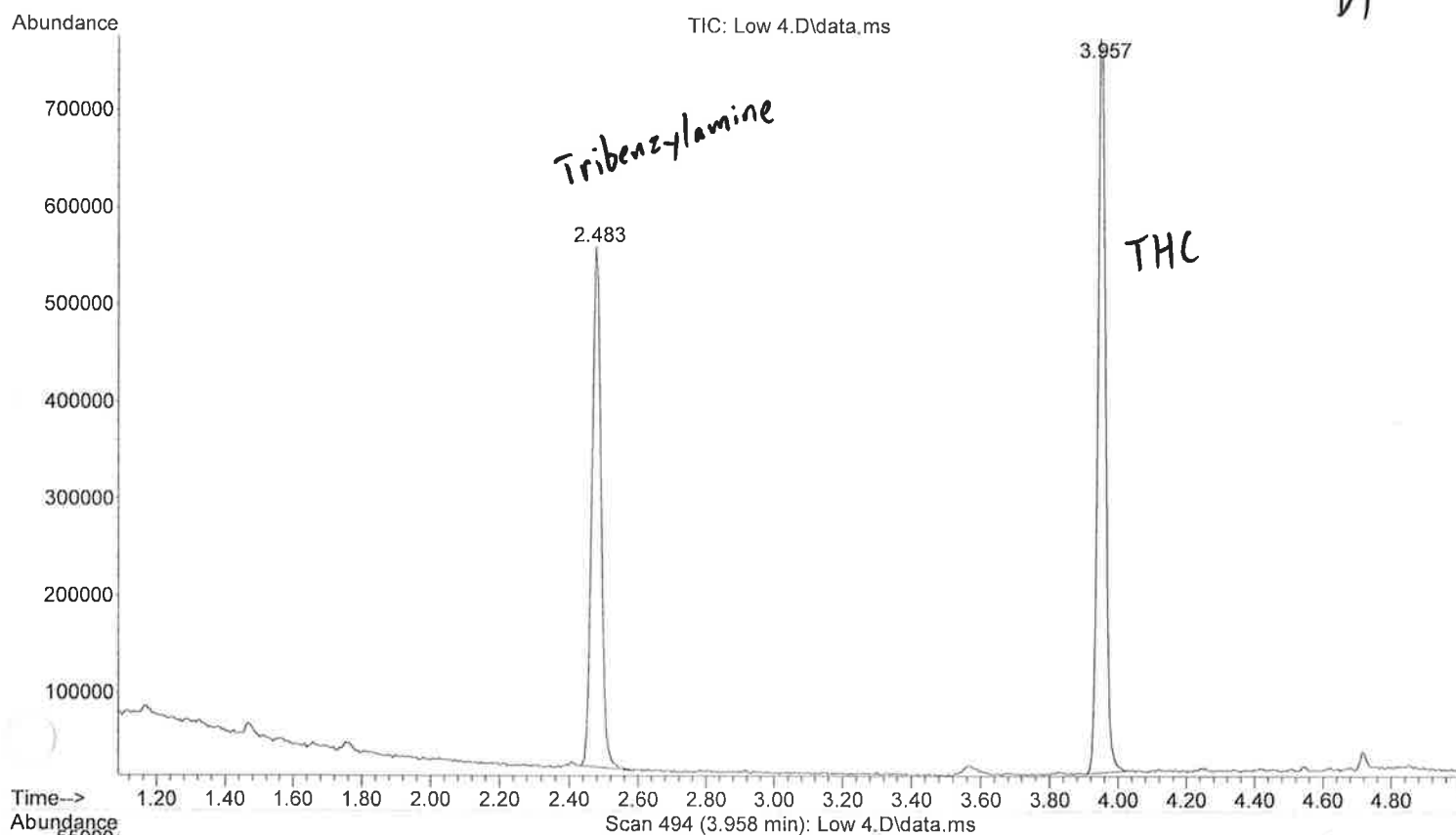
Sum of corrected areas: 25023230

MSDRUGS100.M Tue Aug 20 14:56:20 2019

$$\frac{13789068}{11234162} = 1.227$$

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Low 4.D
Operator : BTT
Acquired : 20 Aug 2019 14:10 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 36

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : Low 4.D
Acq On : 20 Aug 2019 14:10
Operator : BTT
Sample : Standard
ALS Vial : 36 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Low 4.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.483	232	241	258	BB	525587	9899986	82.60%	45.236%
2	3.957	485	494	508	BB	766844	11985019	100.00%	54.764%

Sum of corrected areas: 21885005

MSDRUGS100.M Tue Aug 20 14:57:04 2019

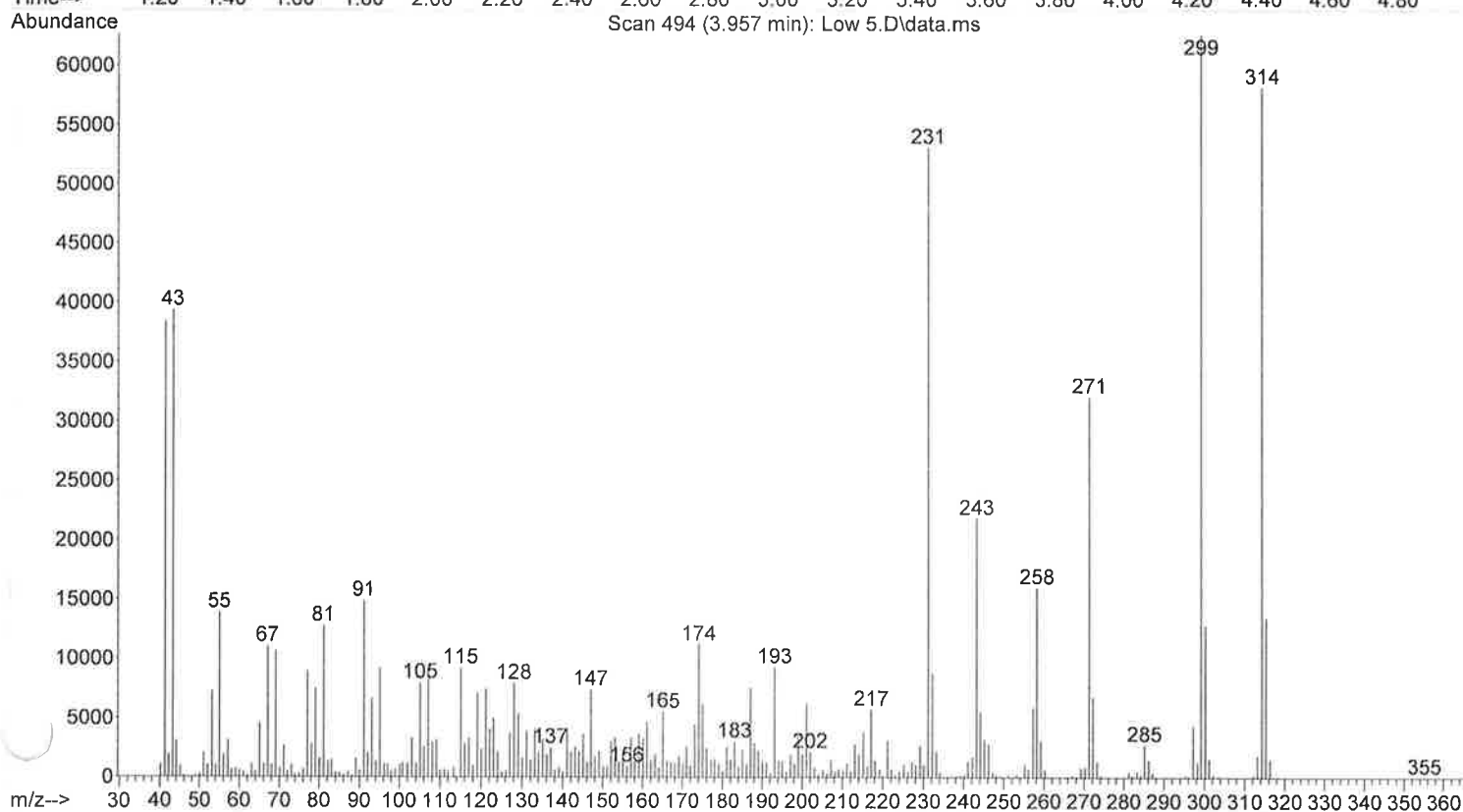
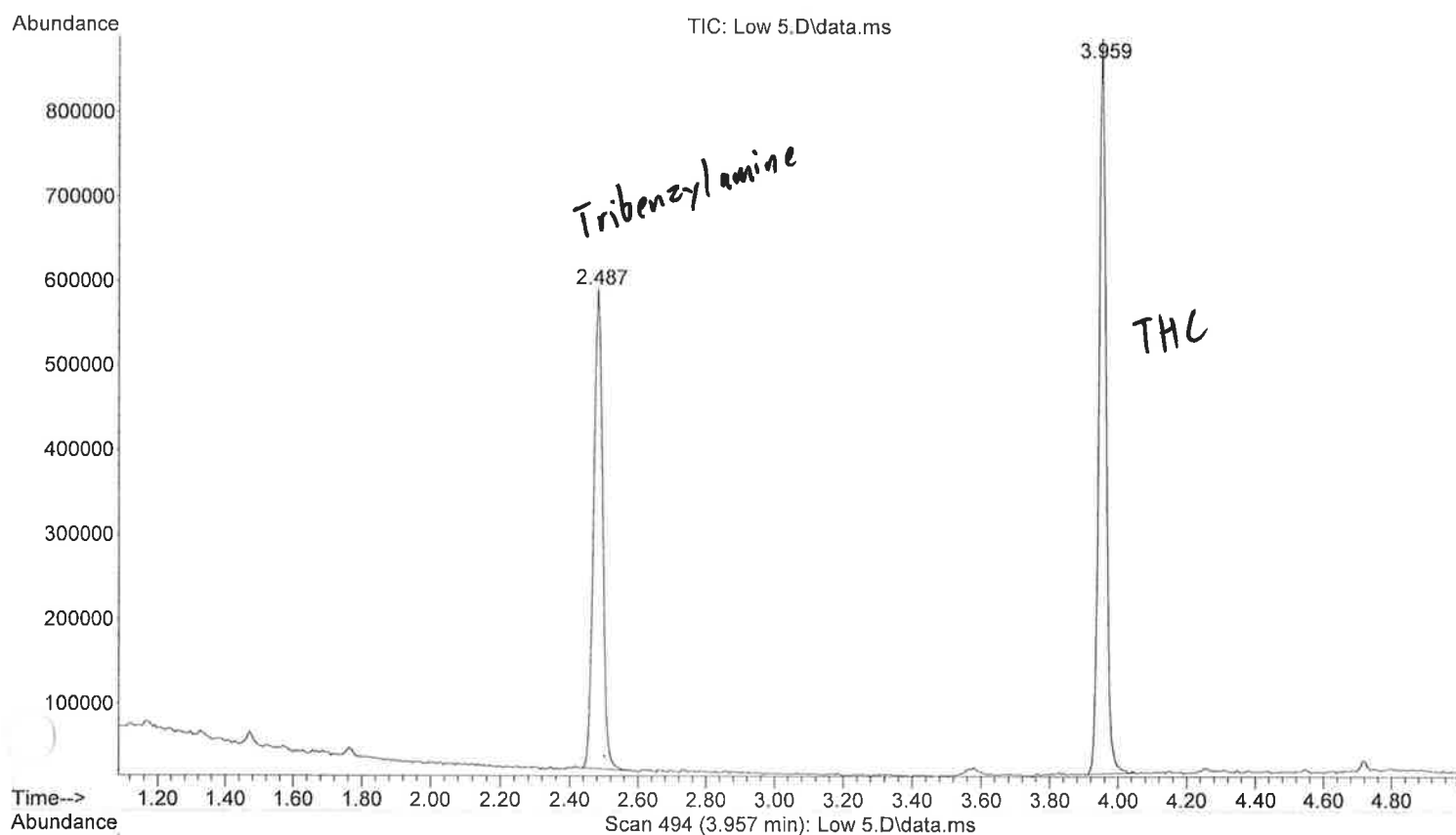
$$\frac{11985019}{9899986} = 1.211$$

8/21/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\Low 5.D
Operator : BTT
Acquired : 20 Aug 2019 14:34 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 37

8/21/19

BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : Low 5.D
Acq On : 20 Aug 2019 14:34
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 37 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Low 5.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.487	233	242	258	BB	556625	10376629	80.72%	44.665%
2	3.959	485	494	511	BB	843452	12855360	100.00%	55.335%

Sum of corrected areas: 23231989

MSDRUGS100.M Tue Aug 20 14:59:43 2019

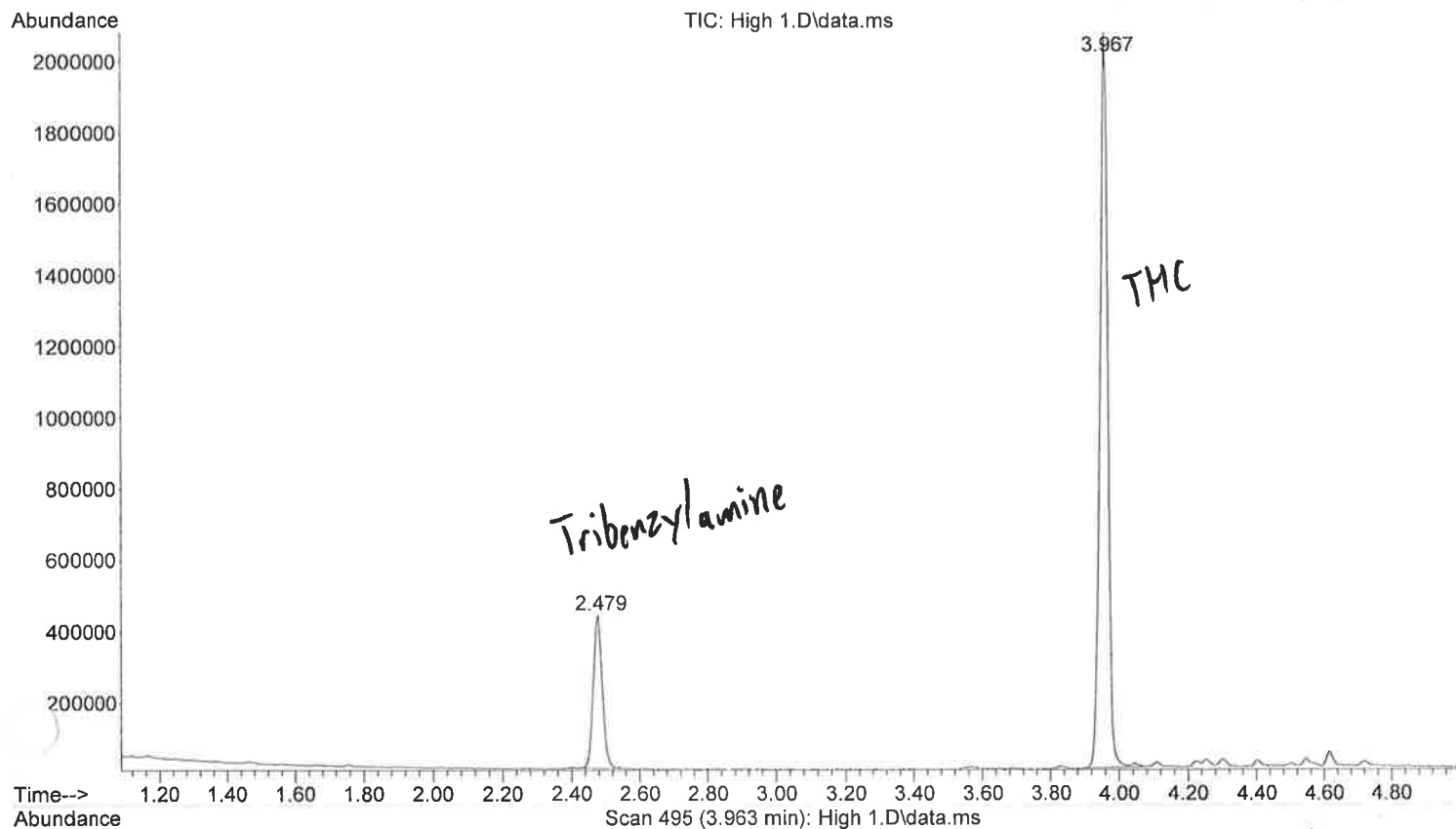
~~84345~~ BT

$$\frac{12855360}{10376629} = 1.239$$

8/21/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\High 1.D
Operator : BTT
Acquired : 20 Aug 2019 14:57 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial number: 38

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : High 1.D
Acq On : 20 Aug 2019 14:57
Operator : BTT
Sample : Standard
ALS Vial : 38 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: High 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.479	224	240	253	BB	424797	7947738	24.48%	19.666%
2	3.967	484	496	515	BB	2035935	32465544	100.00%	80.334%

Sum of corrected areas: 40413283

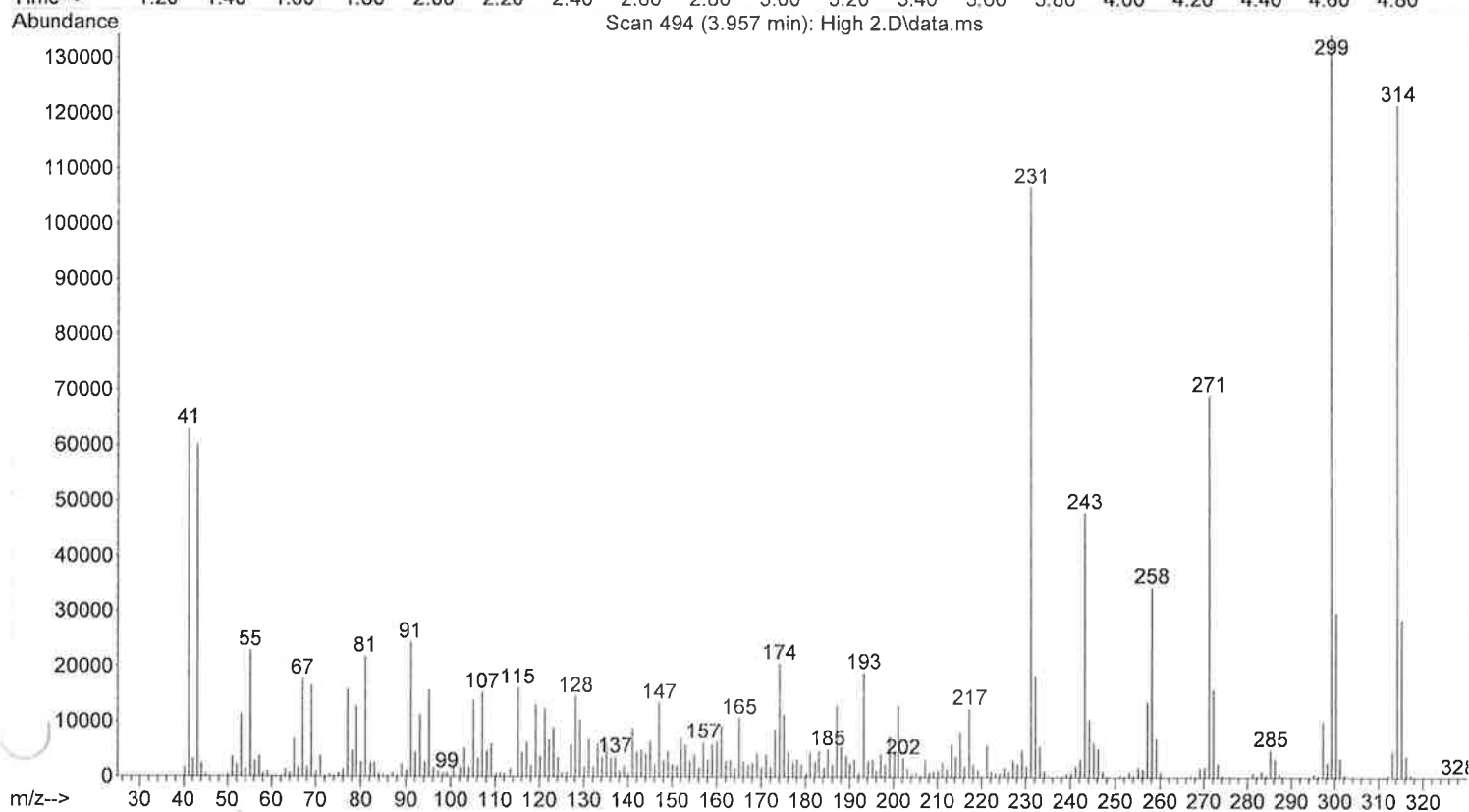
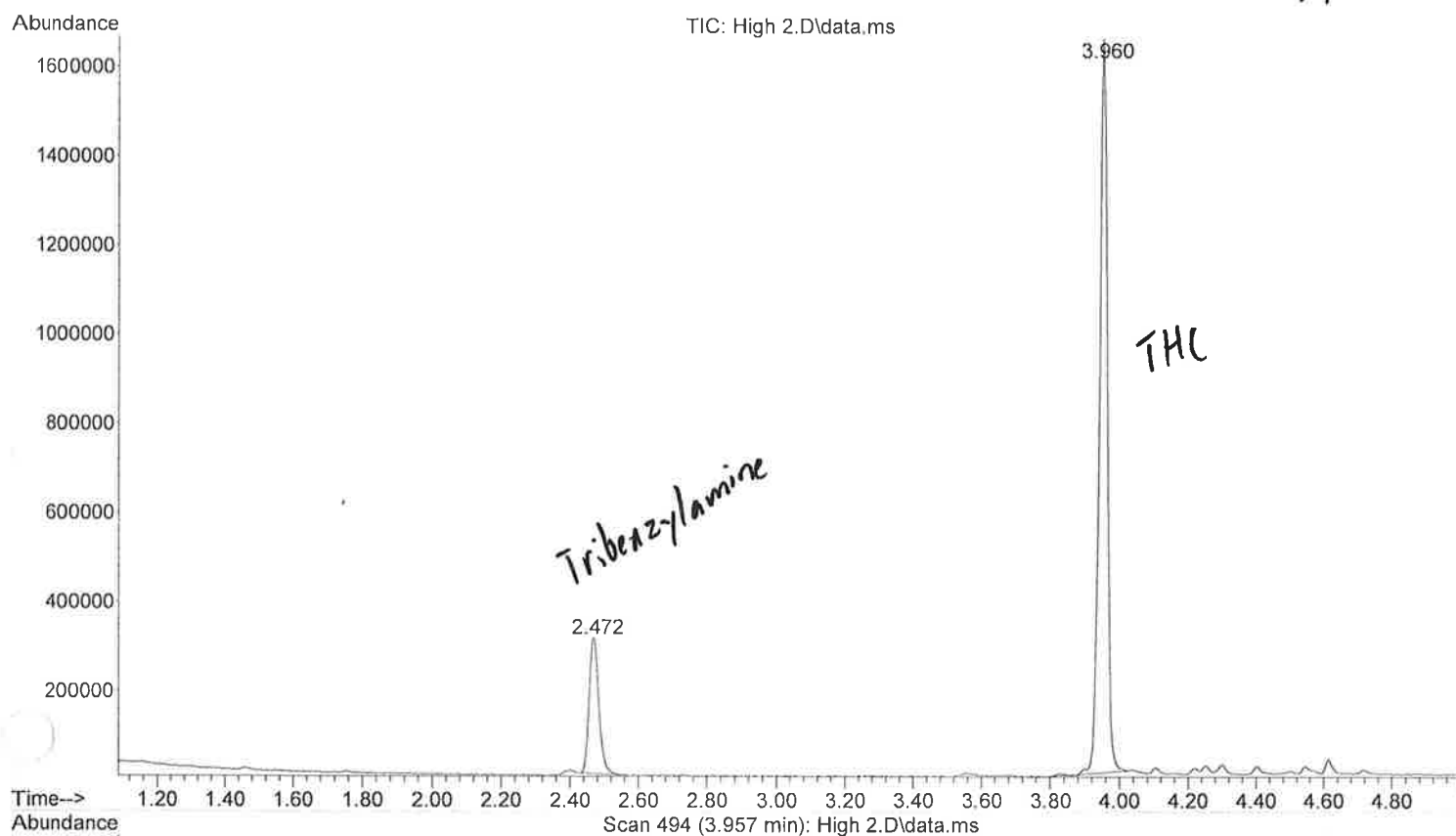
MSDRUGS100.M Tue Aug 20 16:14:28 2019

$$\frac{32465544}{7947738} = 4.085$$

8/21/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\High 2.D
Operator : BTT
Acquired : 20 Aug 2019 15:21 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial number: 39

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : High 2.D
Acq On : 20 Aug 2019 15:21
Operator : BTT
Sample : Standard
c : Methanol
ALS Vial : 39 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: High 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.472	232	239	253	BB	306681	6043768	23.26%	18.871%
2	3.960	467	494	506	BV	1609912	25982135	100.00%	81.129%

Sum of corrected areas: 32025903

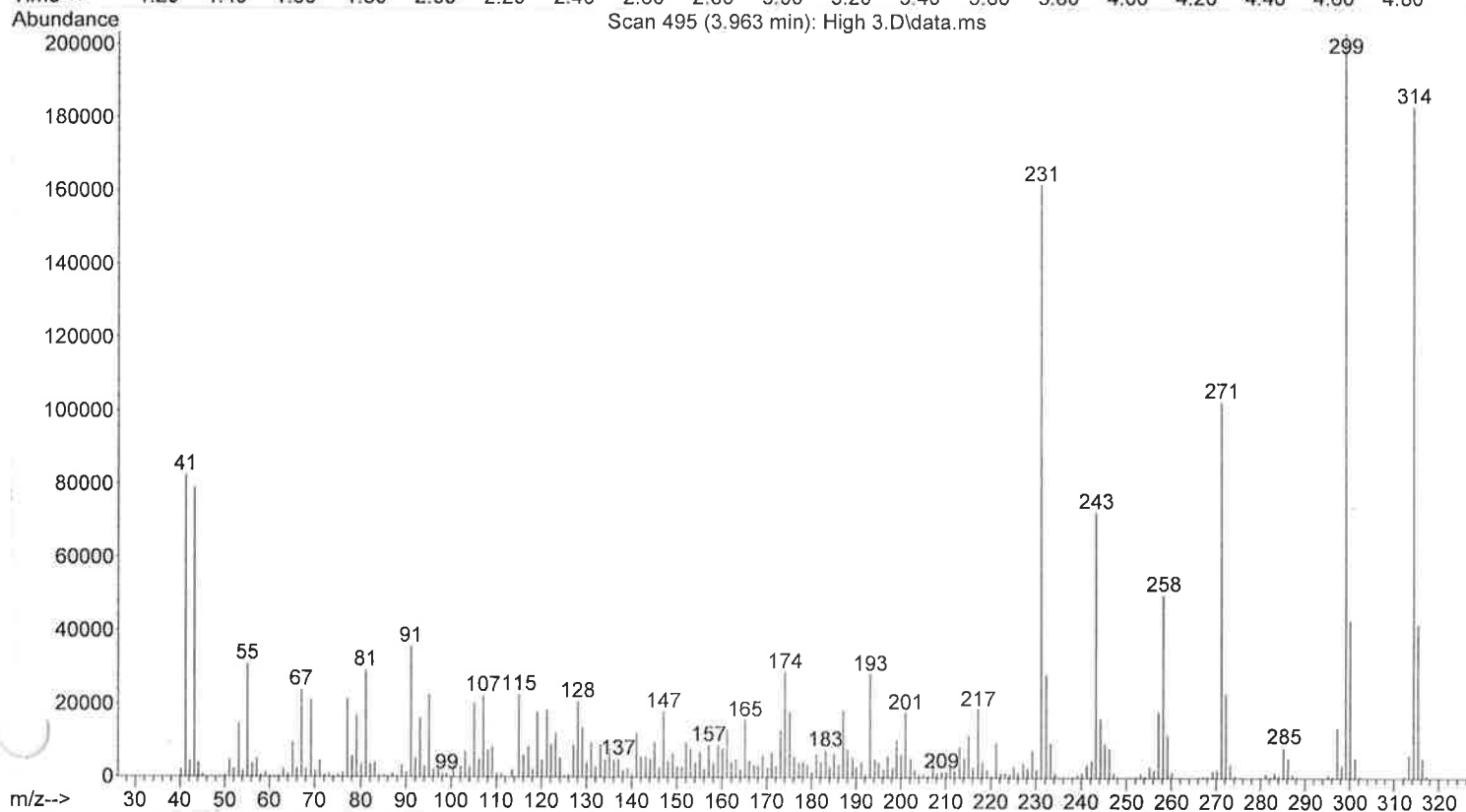
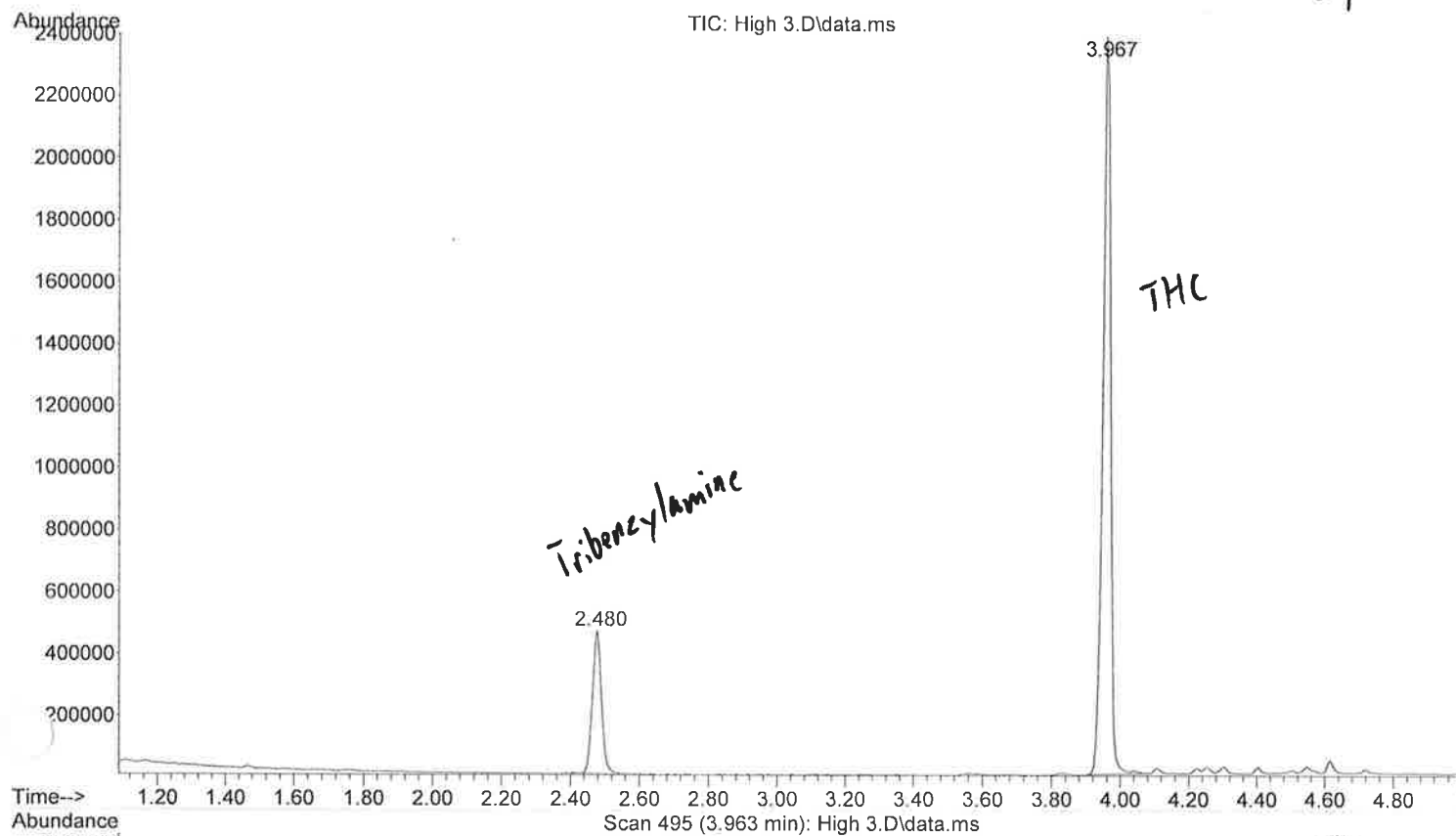
MSDRUGS100.M Tue Aug 20 16:15:15 2019

$$\frac{25982135}{6043768} = 4.299$$

8/21/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\High 3.D
Operator : BTT
Acquired : 20 Aug 2019 15:44 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial Number: 40

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : High 3.D
Acq On : 20 Aug 2019 15:44
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 40 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: High 3.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.480	223	240	253	BB	451016	8351884	22.33%	18.251%
2	3.967	484	496	514	BB	2363457	37409088	100.00%	81.749%

Sum of corrected areas: 45760972

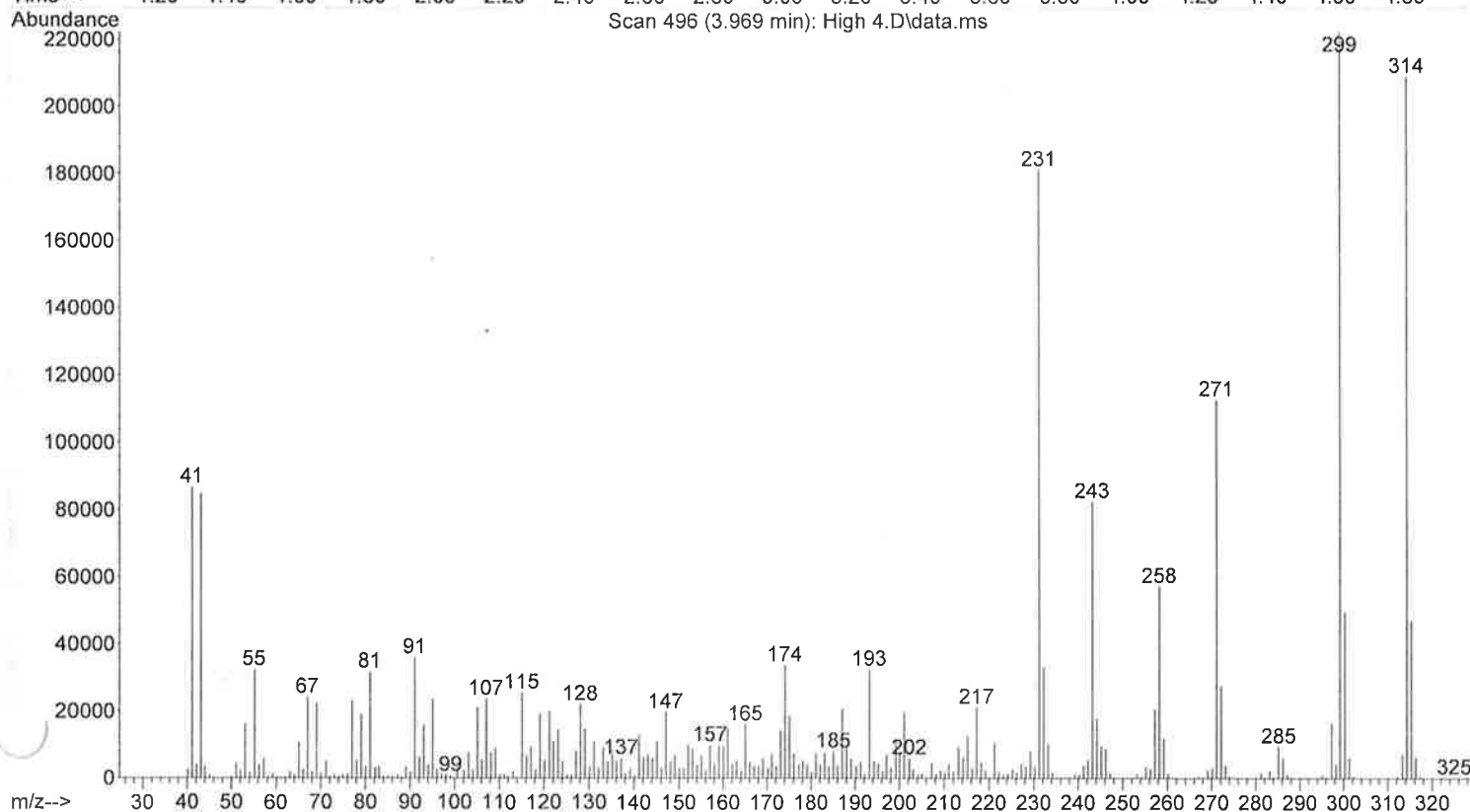
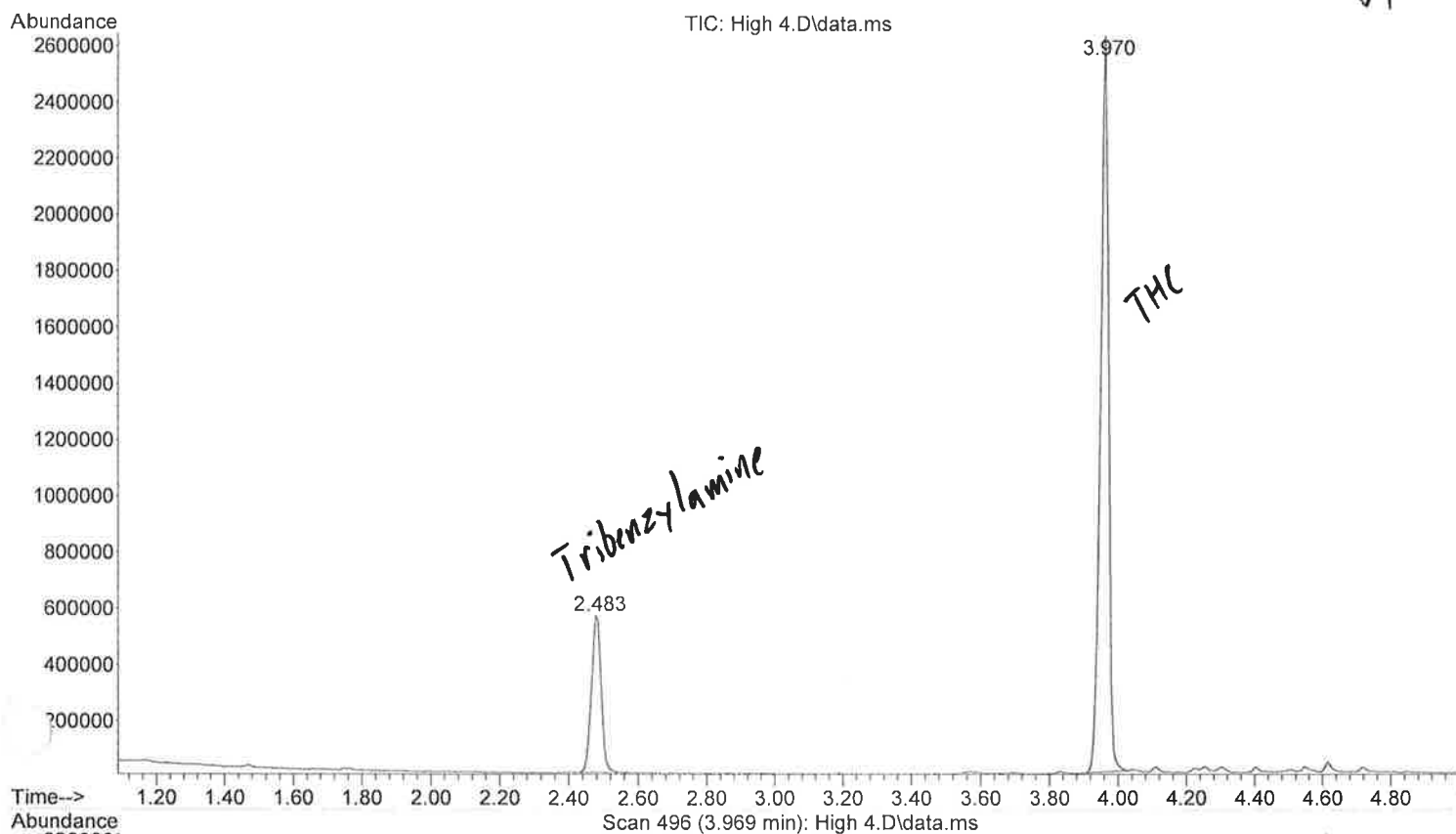
MSDRUGS100.M Tue Aug 20 16:15:51 2019

$$\frac{37409088}{8351884} = 4.479$$

8/21/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\High 4.D
Operator : BTT
Acquired : 20 Aug 2019 16:08 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial Number: 41

8/21/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : High 4.D
Acq On : 20 Aug 2019 16:08
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 41 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: High 4.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.483	232	241	257	BB	553697	10756619	25.65%	20.413%
2	3.970	485	496	507	BV	2491194	41937763	100.00%	79.587%

Sum of corrected areas: 52694382

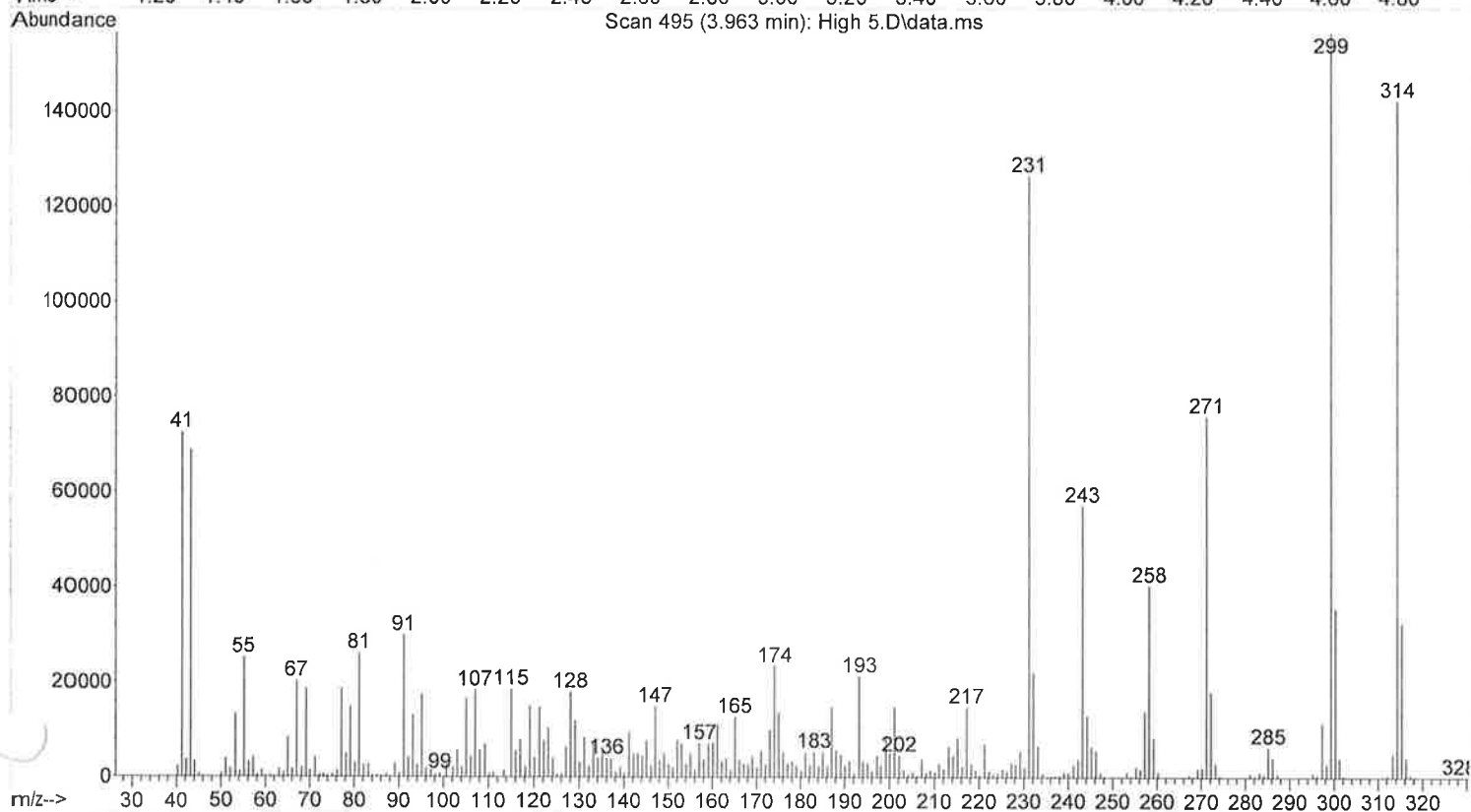
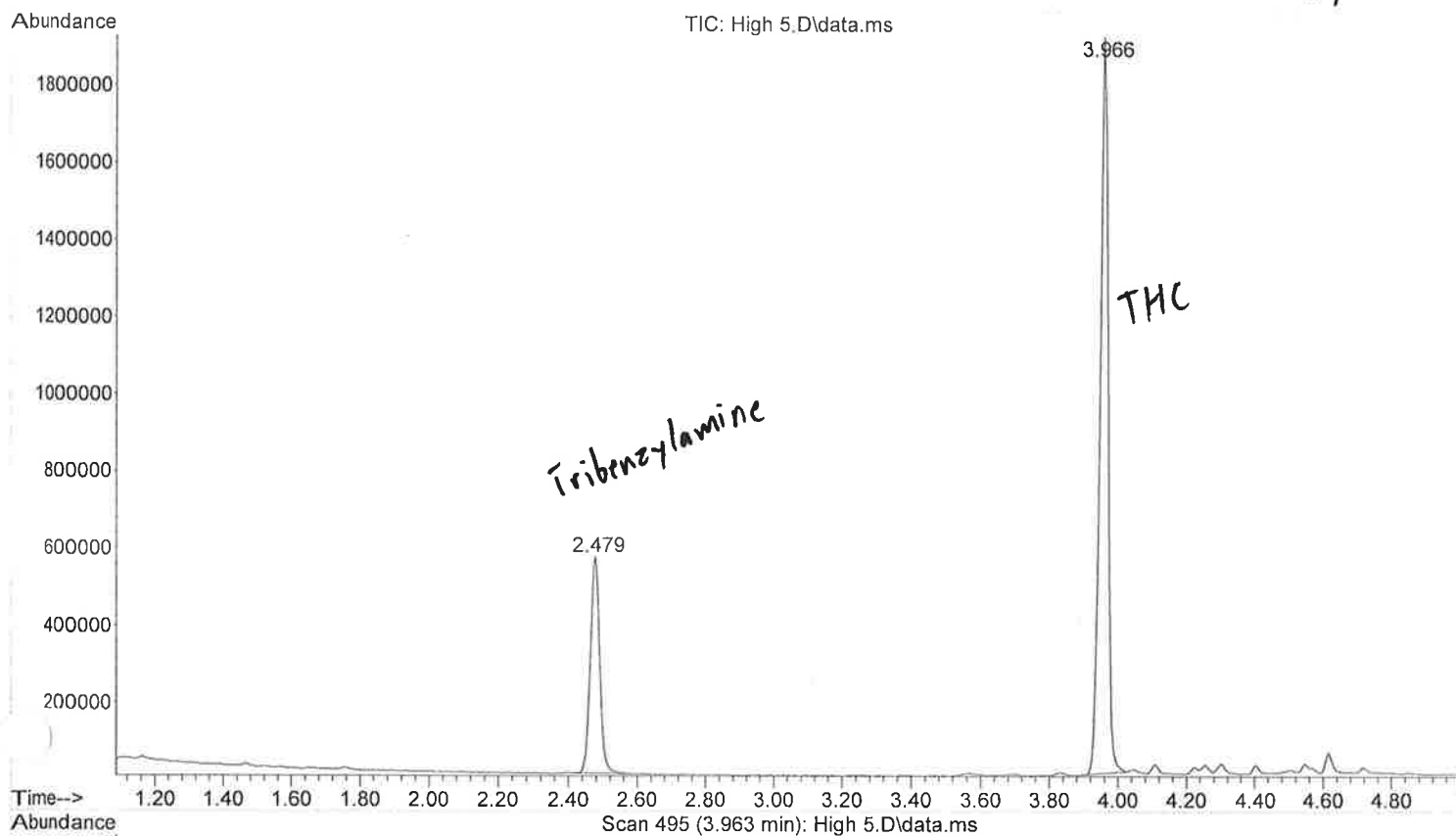
MSDRUGS100.M Tue Aug 20 16:16:34 2019

$$\frac{41937763}{10756619} = 3.899$$

8/21/19
BT

File :C:\msdchem\1\DATA\2019\BTT\August\8-20-19\High 5.D
Operator : BTT
Acquired : 20 Aug 2019 16:31 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Methanol
Vial number: 42

8/21/19
BJ



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-20-19\
Data File : High 5.D
Acq On : 20 Aug 2019 16:31
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 42 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: High 5.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.479	231	240	258	BB	556242	10572647	34.77%	25.800%
2	3.966	482	495	506	BV	1871865	30406197	100.00%	74.200%

Sum of corrected areas: 40978844

MSDRUGS100.M Wed Aug 21 07:51:35 2019

$$\frac{30406197}{10572647} = 2.876$$

8/21/19
BT



Manufacturer's Information

Test No. 19-503: Marihuana Identification and THC Quantitation

Each sample pack consisted of three items containing 400 mg of loose plant material. Item 1 consisted of marihuana with a THC concentration of 7.7%. Item 2 consisted of marshmallow leaf. Item 3 consisted of marihuana with a THC concentration of 11.7%. Concentration of THC is determined by the supplier utilizing GC. Marihuana is a Schedule I controlled substance in the United States.

SAMPLE PREPARATION-

ITEMS 1 and 3 (PREPARATION): Approximately 400 mg of loose marihuana plant material was weighed out and deposited into a glassine bag, which was folded and secured with a label. The folded glassine bag was placed into a small colored bag. A red-colored bag was used for Item 1 and a silver-colored bag was used for Item 3. The bags were heat sealed and then placed into a pre-labeled envelope.

Item 2 (PREPARATION): Approximately 400 mg of loose marshmallow leaf plant material was weighed out and deposited into a glassine bag which was folded and taped with a label. The folded glassine bag was placed into a small, gold-colored bag. The bag was heat sealed and then placed into a pre-labeled envelope.

SAMPLE PACK ASSEMBLY: One envelope of each Item was placed into a larger pre-labeled sample pack envelope.

VERIFICATION: Laboratories that conducted predistribution analysis reported the identification of marihuana in Items 1 and 3. The following methods were used to examine the items: microscopic and macroscopic analysis, color tests, GC/MS, LC, and HPLC-UV-DAD.



Lab # CTS Plant Material
Analyst Brett Trotter

Page # 1
Initials BT

Date(s) 8/21/2019 – 8/22/2019

Total number of pages 9

Outer packaging: Man Env Ev T

Exhibit #: Item 1

Description: Plant material was in a wax bag with a sticker in a red foil package in a man. Env. ev T in the Man Env Ev T.

Test performed/Observations:

Ma: gr pm
M: sh cy
D B: no color/no color D: pur/pur
4-AP B: Clear 4-AP: Pink
Quant Screen GC/MS – 100.70 mg – greater than 1%

Results:

0.38 grams – Dynamic Net Weight
Marijuana – THC > 1%
Sch. VI

Exhibit #: Item 2

Description: Plant material was in a wax bag with a sticker in a gold foil package in a man. Env. ev T in the Man Env Ev T.

Test performed/Observations:

Ma: gr pm
M: sh
D B: no color/no color D: no color/no color
4-AP B: Clear 4-AP: Clear
Quant Screen GC/MS – 100.89 mg – No THC

Results:

0.40 grams – Dynamic Net Weight
No controlled substances detected
Sch. N/A

Exhibit #: Item 3

Description: Plant material was in a wax bag with a sticker in a silver foil package in a man. Env. ev T in the Man Env Ev T.

Quant Screen GC/MS – 100.74 mg – greater than 1%

Test performed/Observations:

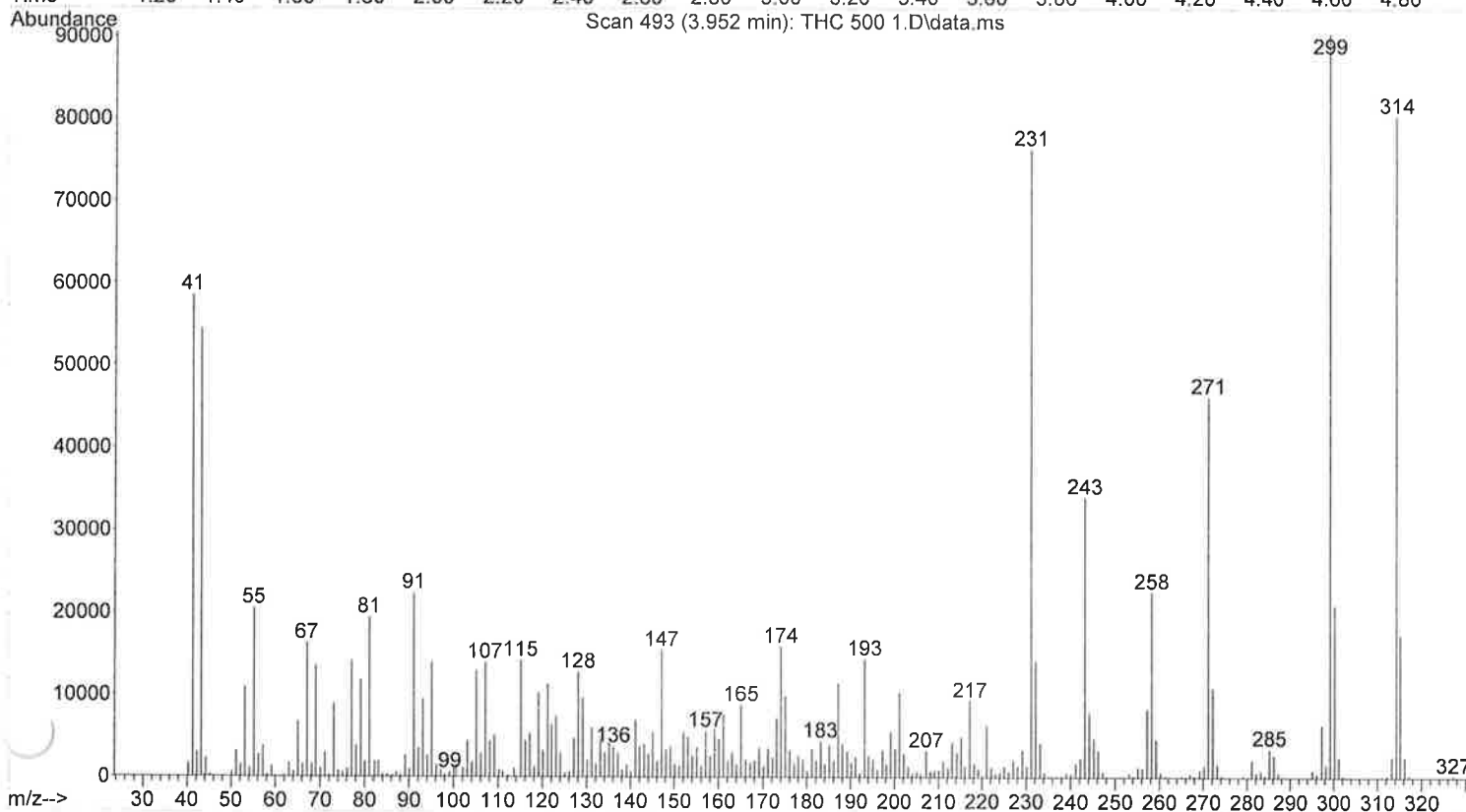
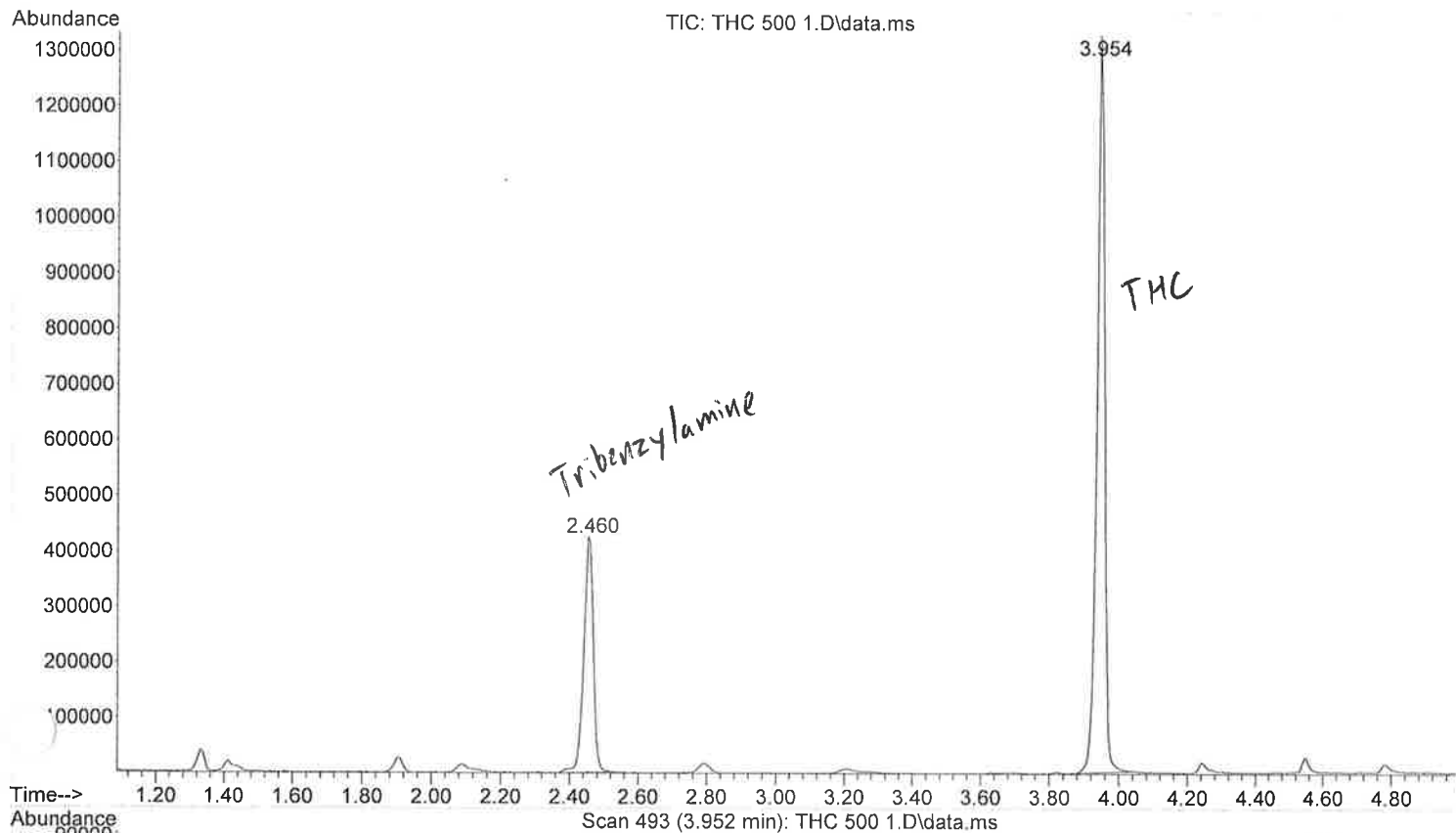
Ma: gr pm
M: sh cy
D B: no color/no color D: pur/pur
4-AP B: Clear 4-AP: Blue

Results:

0.39 grams – Dynamic Net Weight
Marijuana – THC > 1%
Sch. VI

File : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\THC 500 1.D
Operator : BTT
Acquired : 22 Aug 2019 8:06 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Standard
Misc Info : Methanol
Vial number: 52

2.99
8/22/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\
Data, File : THC 500 1.D
Acq On : 22 Aug 2019 8:06
Operator : BTT
Sample : Standard
Solvent : Methanol
ALS Vial : 52 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: THC 500 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.460	221	237	249	BB	424046	8167847	40.20%	28.672%
2	3.954	480	493	508	BB	1290510	20318972	100.00%	71.328%

Sum of corrected areas: 28486819

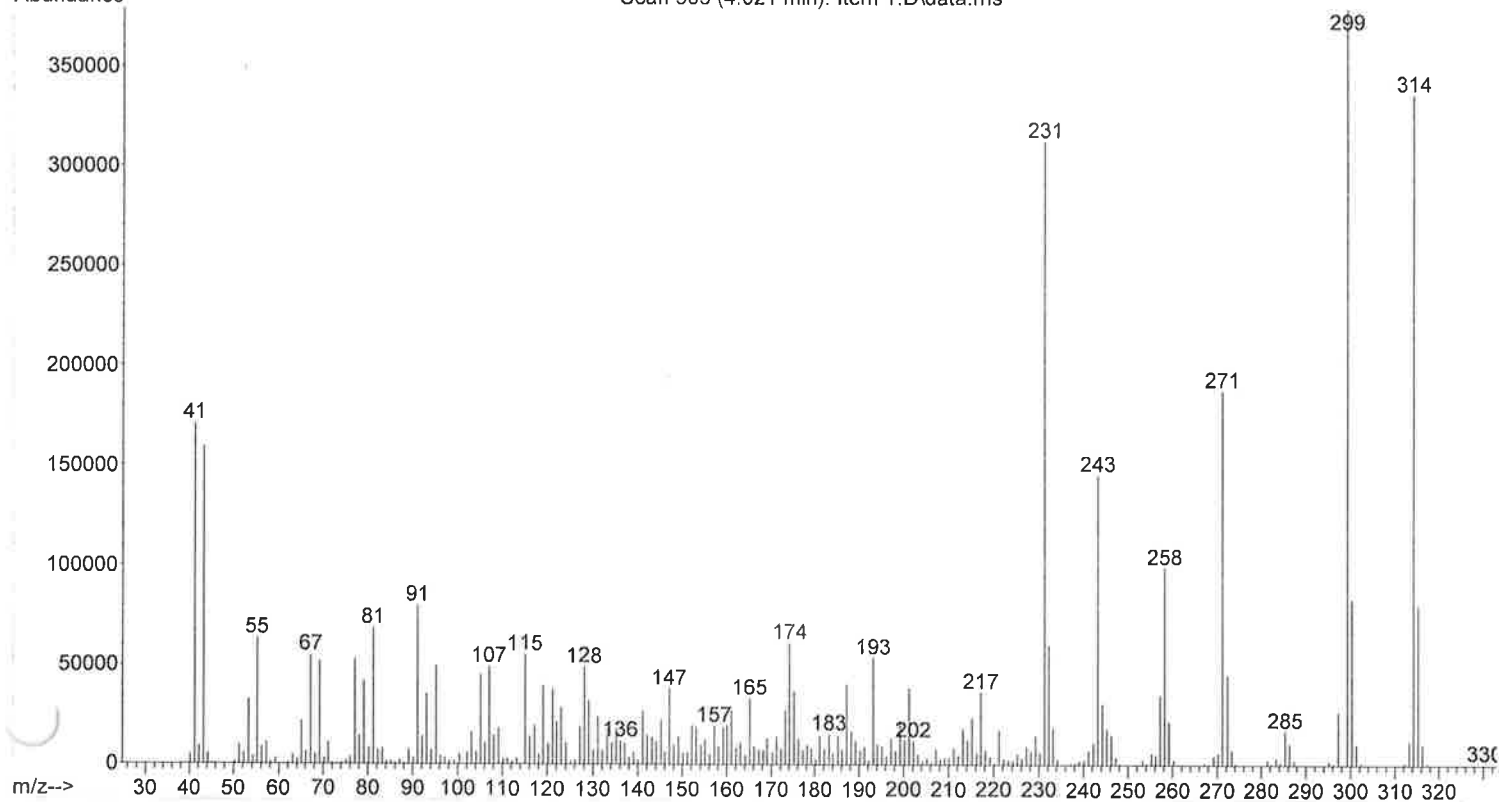
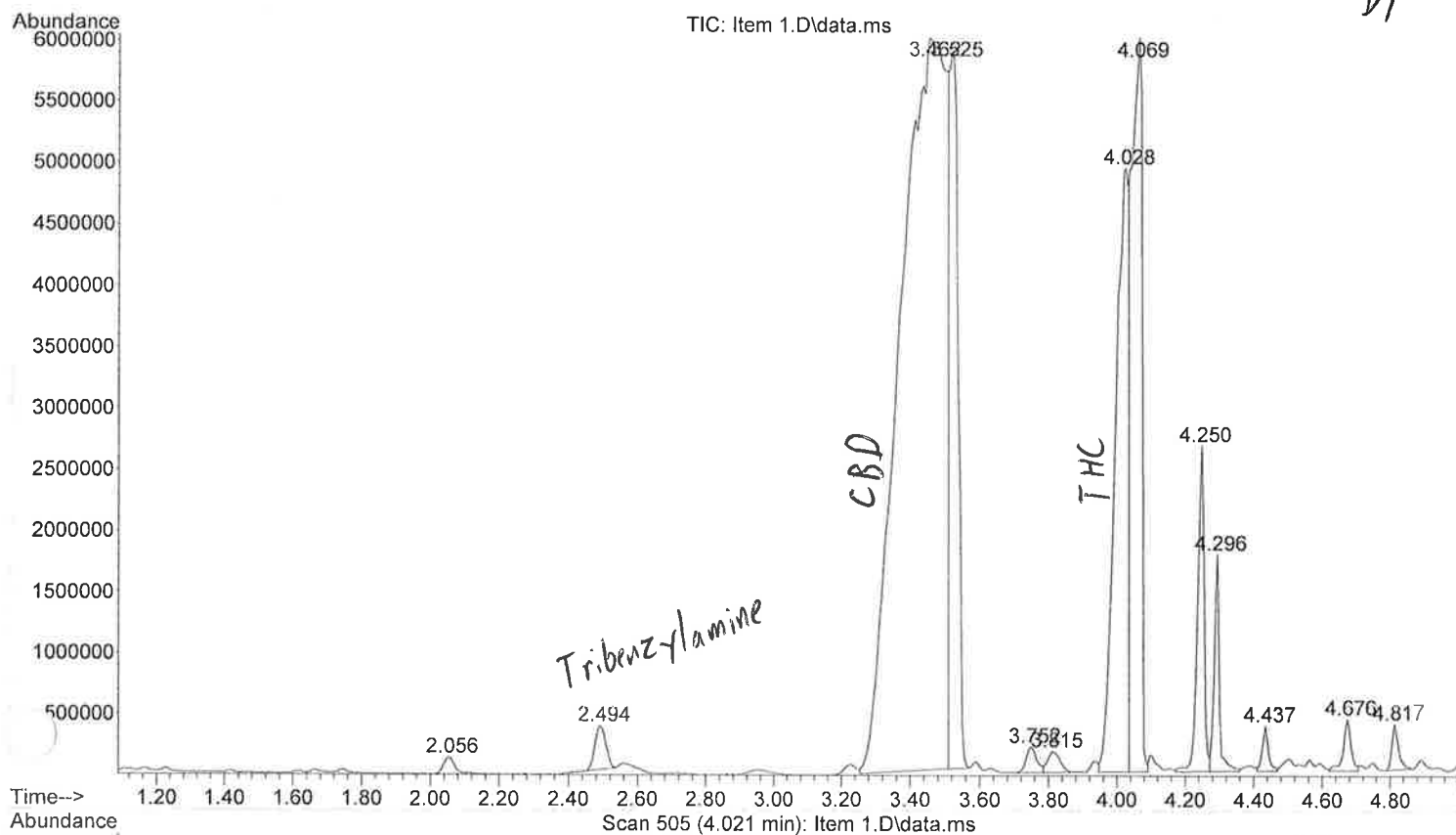
MSDRUGS100.M Thu Aug 22 10:59:02 2019

$$\frac{20318972}{8167847} = 2.488$$

3099
8/22/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\Item 1.D
Operator : BTT
Acquired : 22 Aug 2019 8:54 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Plant material
Misc Info : Methanol
Vial number: 53

409a
8/22/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\
 Data File : Item 1.D
 Acq On : 22 Aug 2019 8:54
 Operator : BTT
 Sample : Plant material
 Solvent : Methanol
 ALS Vial : 53 Sample Multiplier: 1

Integration Parameters: autoint1.e
 Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
 Title : BT THC Quant

Signal : TIC: Item 1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.056	159	167	183	BB	135315	3089976	0.57%	0.307%
2	2.494	222	243	250	BV	352676	7671644	1.42%	0.762%
3	3.462	373	409	417	VV 4	5971893	538536991	100.00%	53.460%
4	3.525	417	420	428	VV 3	5859308	115031893	21.36%	11.419%
5	3.752	449	459	464	BV 3	204515	4296716	0.80%	0.427%
6	3.815	464	470	483	VB 3	165042	4360441	0.81%	0.433%
7	4.028	492	506	507	VV	4956536	124409843	23.10%	12.350%
8	4.069	507	513	517	VV	5947081	140290451	26.05%	13.927%
9	4.250	531	544	548	VV	2507385	35189464	6.53%	3.493%
10	4.296	548	552	563	VV	1690845	18389442	3.41%	1.826%
11	4.437	572	576	582	VV	344665	4561953	0.85%	0.453%
12	4.676	608	617	623	VV 2	405137	6539184	1.21%	0.649%
13	4.817	636	642	650	PV 2	354800	4992279	0.93%	0.496%

Sum of corrected areas: 1007360279

MSDRUGS100.M Thu Aug 22 11:01:11 2019

$$\frac{(124409843 + 140290451)}{7671644} = 34.504$$

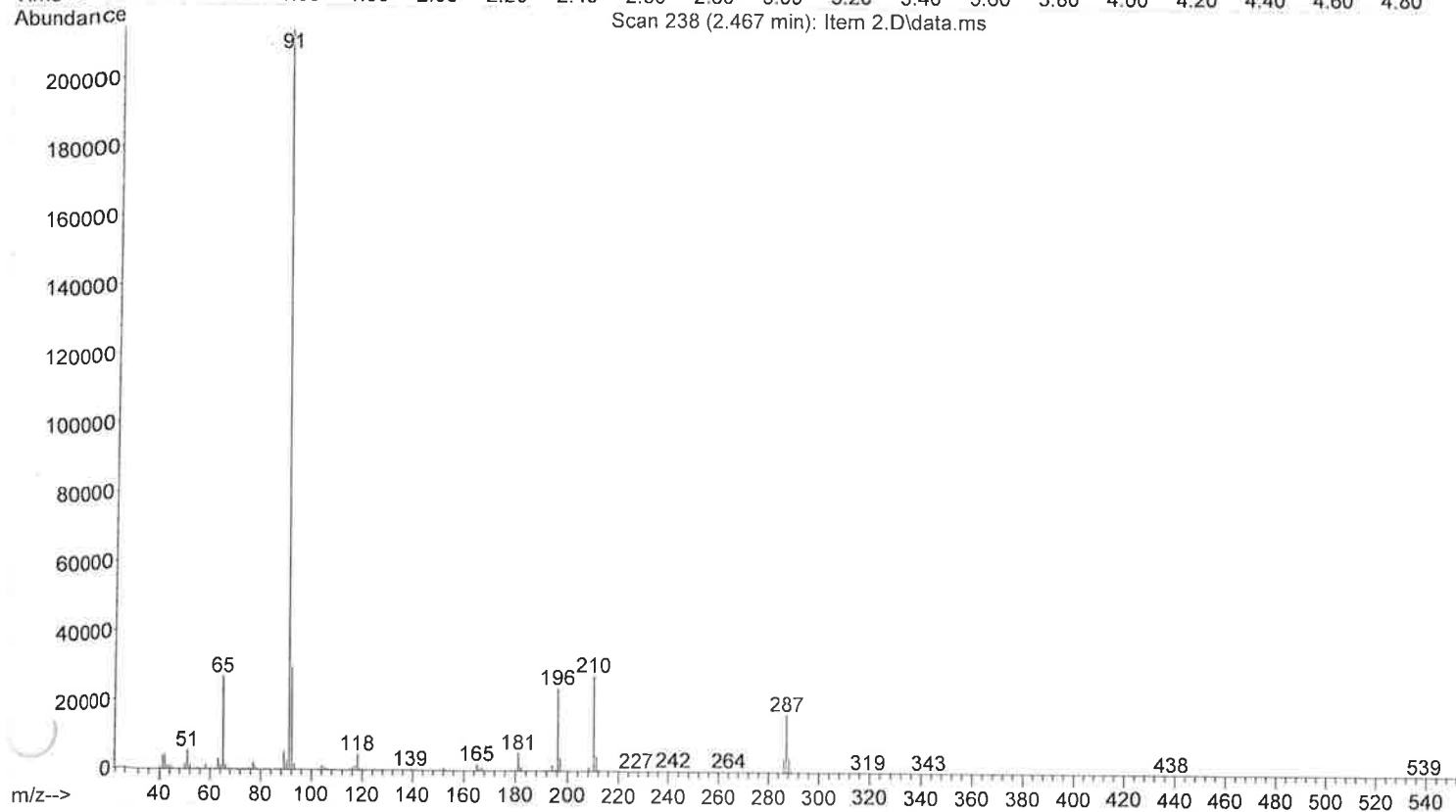
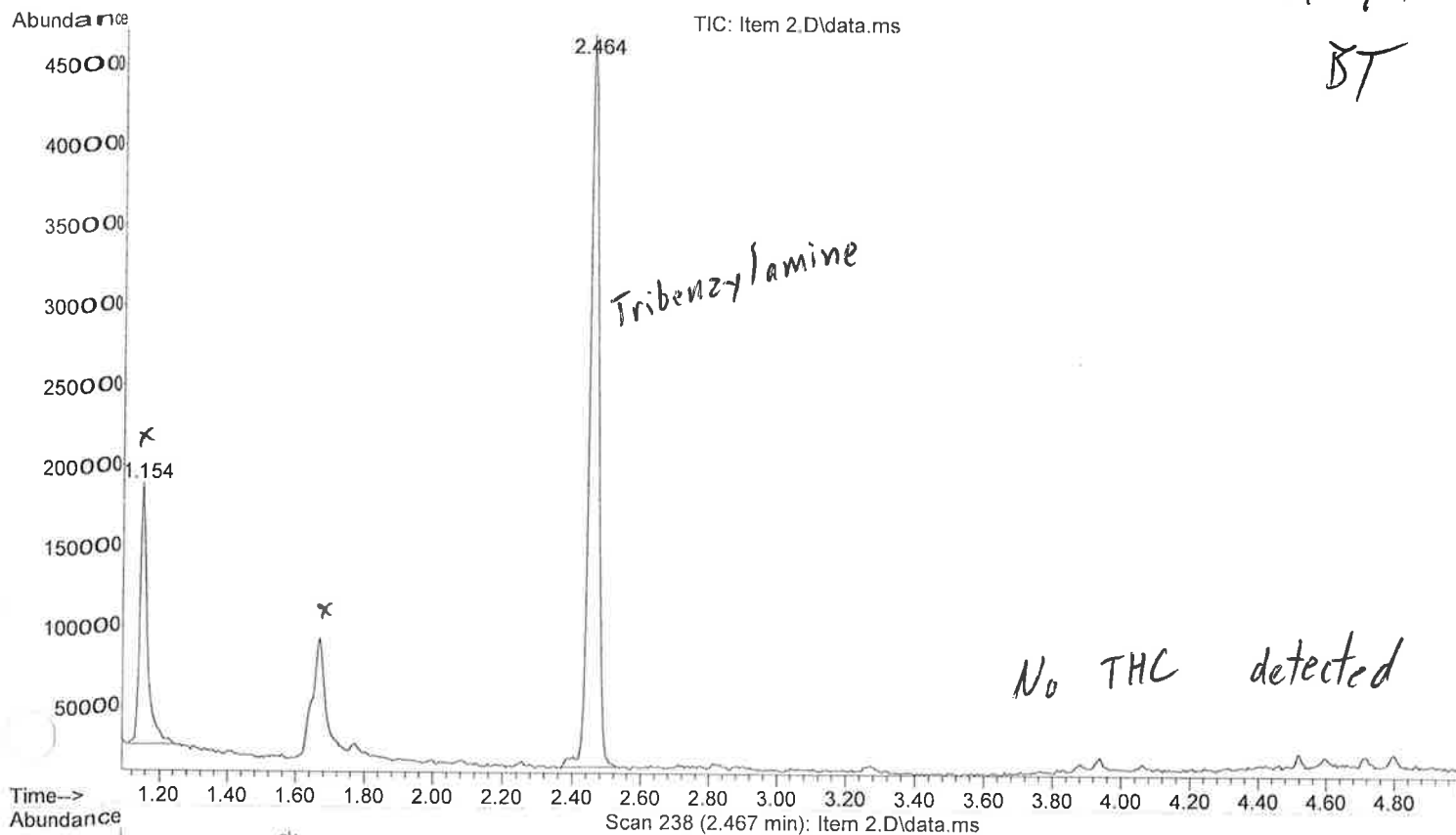
$$\frac{124409843}{7671644} = 16.217$$

$$\frac{140290451}{7671644} = 18.287$$

5 of 9
 8/22/19
 BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\Item 2.D
Operator : BTT
Acquired : 22 Aug 2019 9:18 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Plant material
Methanol
Vial Number: 54

609
8/22/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\
Data File : Item 2.D
Acq On : 22 Aug 2019 9:18
Operator : BTT
Sample : Plant material
Solvent : Methanol
ALS Vial : 54 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Item 2.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.154	4	12	28	BB	154890	2411728	28.24%	22.023%
2	2.464	221	238	250	BB	450503	8539155	100.00%	77.977%

Sum of corrected areas: 10950883

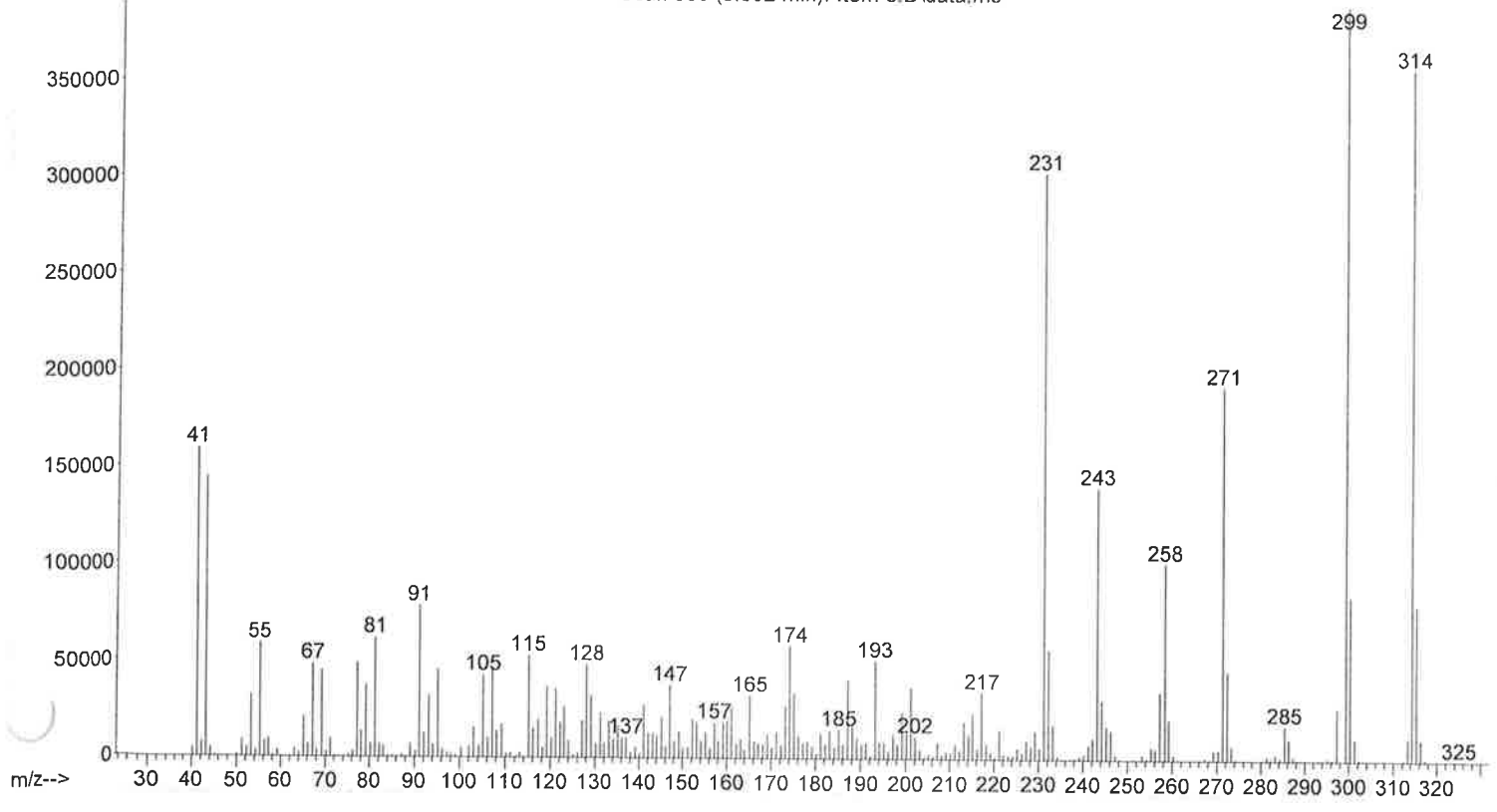
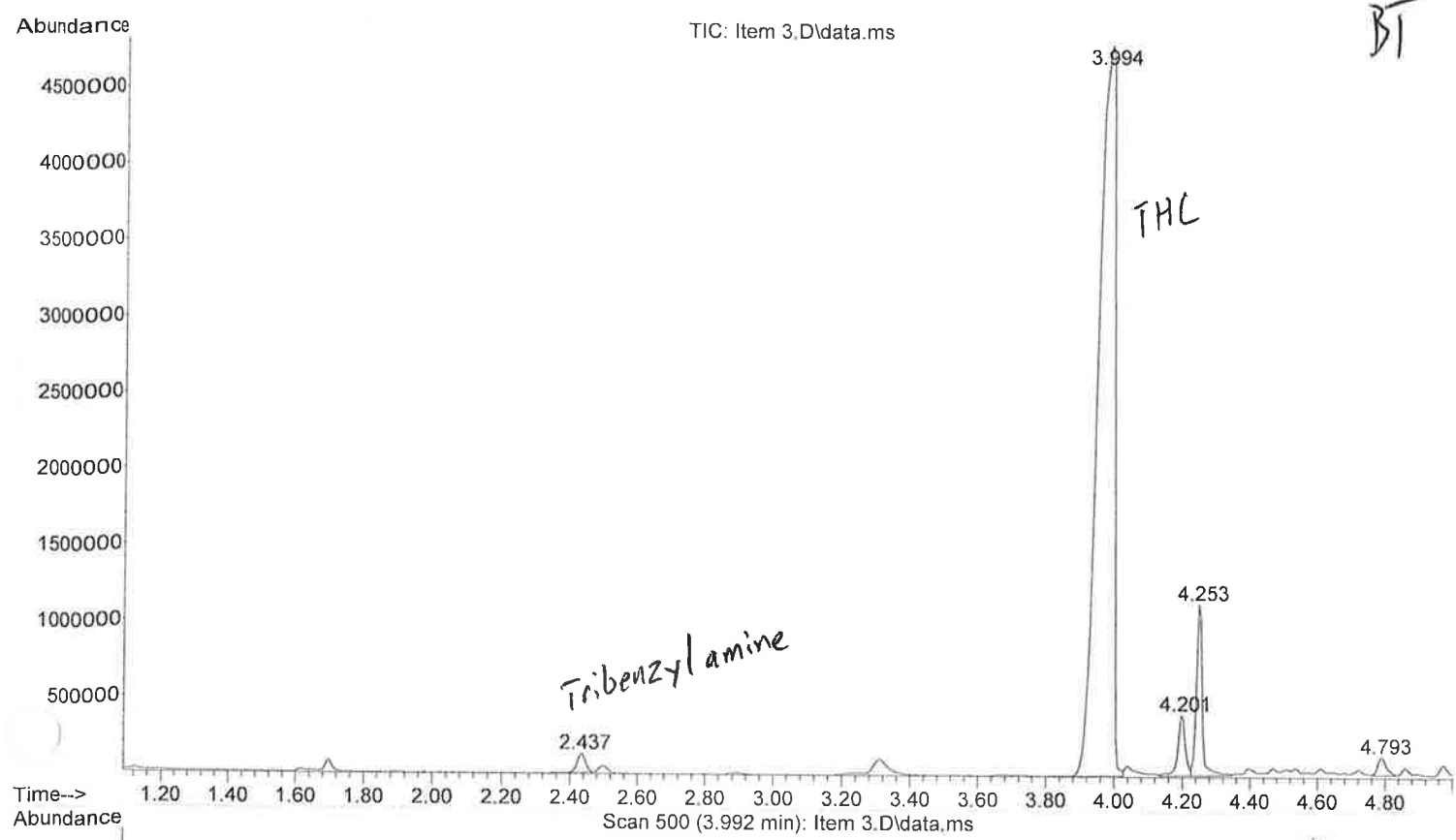
MSDRUGS100.M Thu Aug 22 11:02:06 2019

No THC peak

7.59
8/22/19
BT

File : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\Item 3.D
Operator : BTT
Acquired : 22 Aug 2019 9:41 using AcqMethod THC-MS.M
Instrument : Gumbo
Sample Name: Plant material
Misc Info : Methanol
Vial Number: 55

80F9
8/22/19
BT



Data Path : C:\msdchem\1\DATA\2019\BTT\August\8-22-19\
Data File : Item 3.D
Acq On : 22 Aug 2019 9:41
Operator : BTT
Sample : Plant material
Solvent : Methanol
ALS Vial : 55 Sample Multiplier: 1

Integration Parameters: autoint1.e
Integrator: ChemStation

Method : C:\msdchem\1\METHODS\MSDRUGS100.M
Title : BT THC Quant

Signal : TIC: Item 3.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.437	223	233	239	BV	124309	2080698	1.28%	1.113%
2	3.994	477	500	506	BV 3	4793647	163035875	100.00%	87.226%
3	4.201	524	536	540	VV	389872	5949220	3.65%	3.183%
4	4.253	540	545	561	VV	1104201	13771346	8.45%	7.368%
5	4.793	632	637	645	VV 2	113522	2074008	1.27%	1.110%

Sum of corrected areas: 186911147

MSDRUGS100.M Thu Aug 22 11:02:48 2019

$$\frac{163035875}{2080698} = 78.356$$

9.0f9
8/22/19
BT