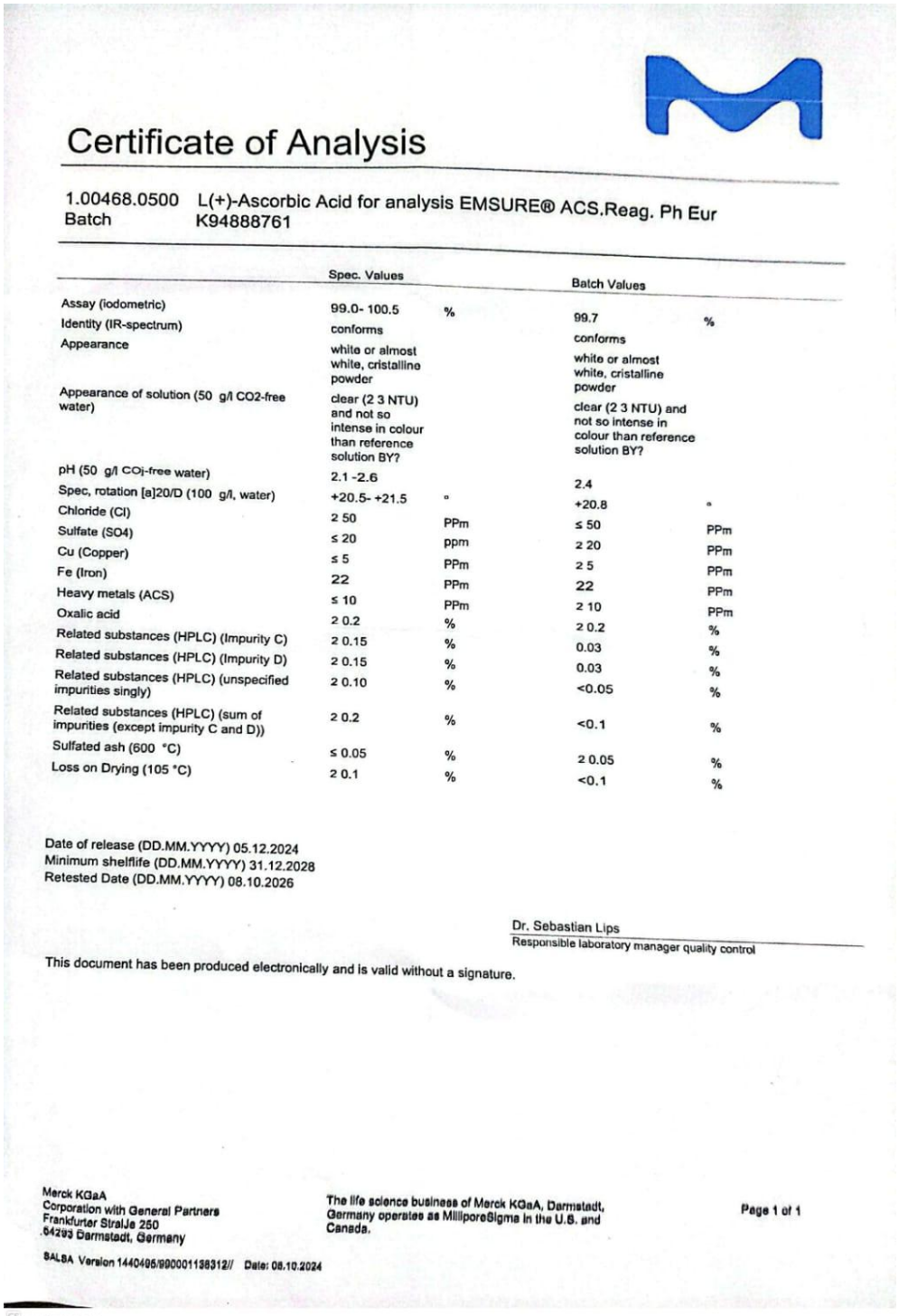
LAMPIRAN

Lampiran 1. Certificate of Analysis Standar Vitamin C



Certificate of Analysis

1.00468.0500 L(+)-Ascorbic Acid for analysis EMSURE® ACS,Reag. Ph Eur
Batch K94888761

	Spec. Values		Batch Values	
Assay (iodometric)	99.0- 100.5	%	99.7	%
Identity (IR-spectrum)	conforms		conforms	
Appearance	white or almost white, cristalline powder		white or almost white, cristalline powder	
Appearance of solution (50 g/l CO2-free water)	clear (2 3 NTU) and not so intense in colour than reference solution BY?		clear (2 3 NTU) and not so intense in colour than reference solution BY?	
pH (50 g/l CO2-free water)	2.1 -2.6		2.4	
Spec, rotation [a]20/D (100 g/l, water)	+20.5- +21.5	°	+20.8	°
Chloride (Cl)	2 50	PPm	≤ 50	PPm
Sulfate (SO4)	≤ 20	ppm	2 20	PPm
Cu (Copper)	≤ 5	PPm	2 5	PPm
Fe (Iron)	22	PPm	22	PPm
Heavy metals (ACS)	≤ 10	PPm	2 10	PPm
Oxalic acid	2 0.2	%	2 0.2	%
Related substances (HPLC) (Impurity C)	2 0.15	%	0.03	%
Related substances (HPLC) (Impurity D)	2 0.15	%	0.03	%
Related substances (HPLC) (unspecified impurities singly)	2 0.10	%	<0.05	%
Related substances (HPLC) (sum of impurities (except impurity C and D))	2 0.2	%	<0.1	%
Sulfated ash (600 °C)	≤ 0.05	%	2 0.05	%
Loss on Drying (105 °C)	2 0.1	%	<0.1	%

Date of release (DD.MM.YYYY) 05.12.2024
Minimum shelflife (DD.MM.YYYY) 31.12.2028
Retested Date (DD.MM.YYYY) 08.10.2026

Dr. Sebastian Lips
Responsible laboratory manager quality control

This document has been produced electronically and is valid without a signature.

Merck KGaA
Corporation with General Partners
Frankfurter Straße 250
64293 Darmstadt, Germany

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Page 1 of 1

SALBA Version 1440495/990001138312// Date: 08.10.2024

Lampiran 2. Kromatogram Uji Kesesuaian Sistem dan Presisi

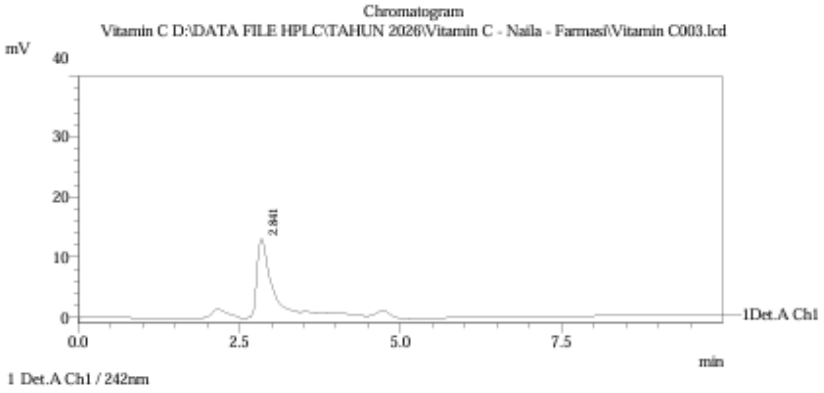
1. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 30 ppm
Vial#	3
Injection Volume	: 10 uL
Data Filename	: Vitamin C003.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:22:15 AM
Data Processed	: 5/20/2026 11:36:01 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plate#	Resolution
1	2.841	188863	1.940	2.216	1155.221	0.000
Total		188863				

2. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 2

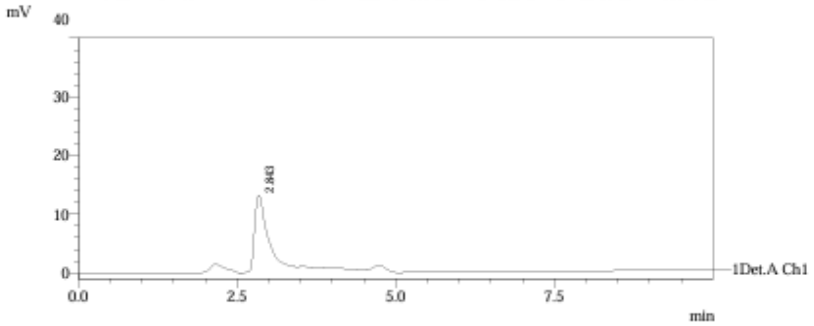
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 30 ppm
Vial#	4
Injection Volume	: 10 uL
Data Filename	: Vitamin C004.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:27:52 AM
Data Processed	: 5/20/2026 11:38:59 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C004.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plate#	Resolution
1	2.843	189295	1.930	2.190	1200.684	0.000
Total		189295				

3. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 3

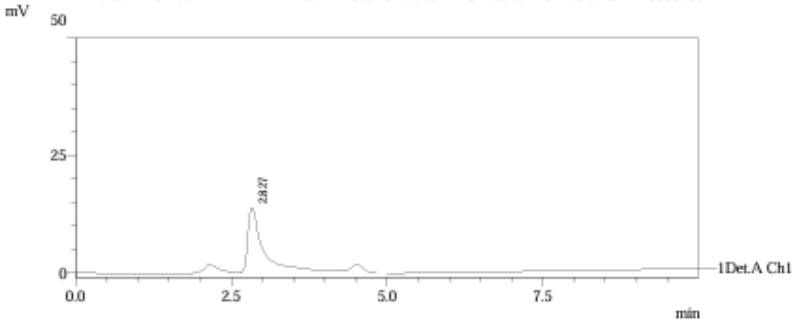
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 30 ppm
Vial#	5
Injection Volume	: 10 uL
Data Filename	: Vitamin C005.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:33:02 AM
Data Processed	: 5/20/2026 11:40:39 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C005.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plate#	Resolution
1	2.827	189888	1.858	2.123	1311.835	0.000
Total		189888				

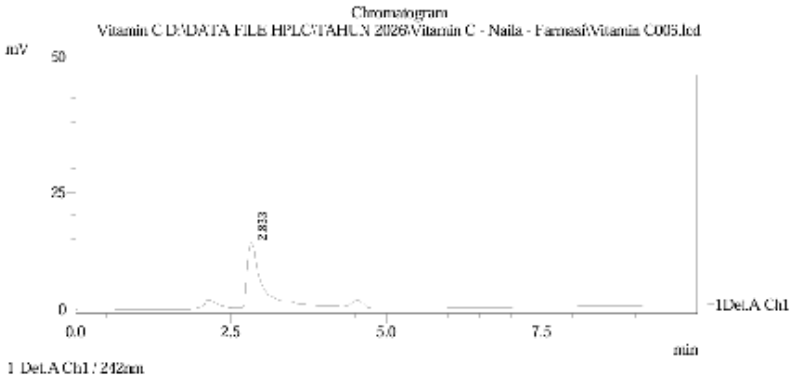
4. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 4

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 30 ppm
Vial#	: 6
Injection Volume	: 10 uL
Data Filename	: Vitamin C006.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:38:02 AM
Data Processed	: 5/20/2026 11:43:32 AM

<Chromatogram>



1 DeLA Ch1 / 242nm

Peak Table

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plates	Resolution
1	2.833	188878	1.778	1.919	1316.744	0.000
Total		188878				

5. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 5

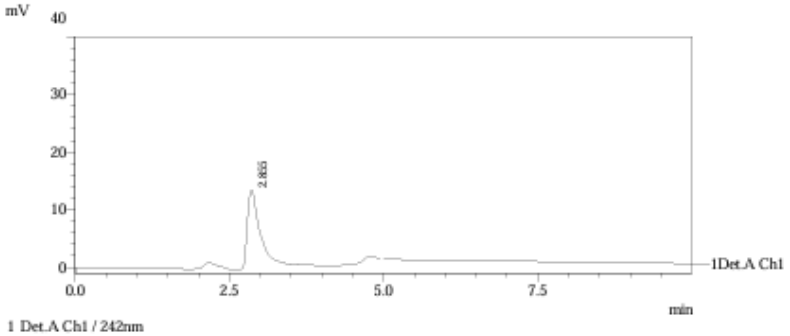
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Std Vit C
Sample ID	: 30 ppm
Vial#	7
Injection Volume	: 10 uL
Data Filename	: Vitamin C007.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:43:10 AM
Data Processed	: 5/20/2026 11:46:00 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C007.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plate#	Resolution
1	2.855	187990	2.013	2.227	1283.962	0.000
Total		187990				

6. Kromatogram Uji Kesesuaian Sistem dan Presisi Replikasi 6

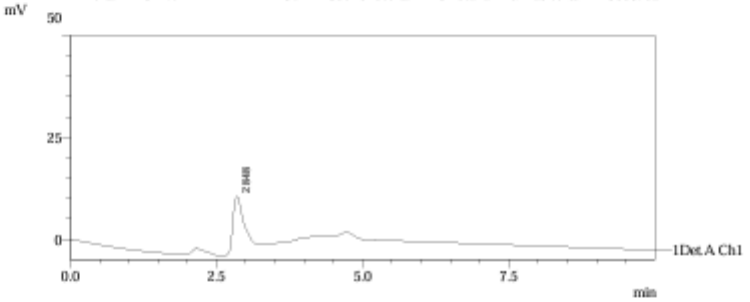
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Std Vit C
Sample ID	: 30 ppm
Vial#	: 8
Injection Volume	: 10 ul.
Data Filename	: Vitamin C008.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:48:09 AM
Data Processed	: 5/20/2026 11:49:00 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C008.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Tailing Factor	k'	Theoretical Plates	Resolution
1	2.848	188561	1.980	2.207	1267.138	0.000
Total		188561				

Lampiran 3. Kromatogram Uji Linearitas

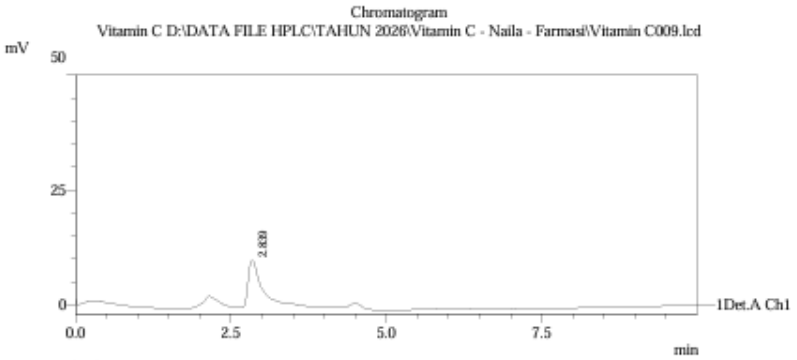
1. Kromatogram Uji Linearitas 10 ppm

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 10 ppm
Vial#	9
Injection Volume	: 10 uL
Data Filename	: Vitamin C009.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 10:57:23 AM
Data Processed	: 5/20/2026 11:52:17 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.839	121095	7233	100.000	100.000
Total		121095	7233	100.000	100.000

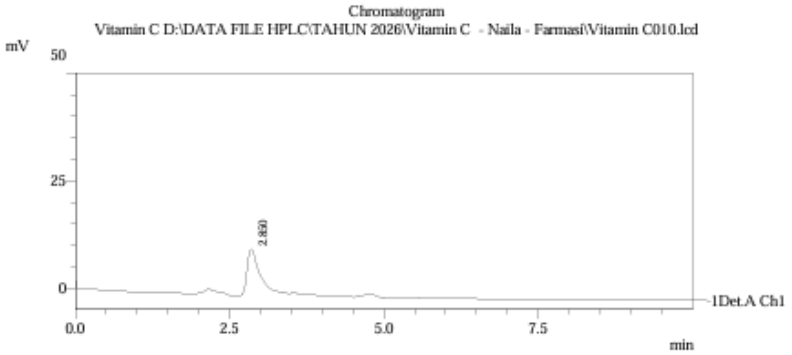
2. Kromatogram Uji Linearitas 20 ppm

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 20 ppm
Vial#	10
Injection Volume	: 10 ul.
Data Filename	: Vitamin C010.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 11:03:52 AM
Data Processed	: 5/20/2026 11:54:38 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.850	151704	10803	100.000	100.000
Total		151704	10803	100.000	100.000

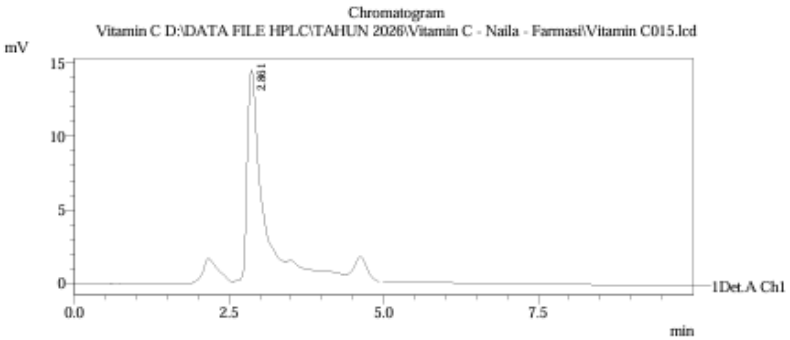
3. Kromatogram Uji Linearitas 30 ppm

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 30 ppm
Vial#	15
Injection Volume	: 10 uL
Data Filename	: Vitamin C015.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 12:40:23 PM
Data Processed	: 5/20/2026 2:03:40 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.861	188962	13969	100.000	100.000
Total		188962	13969	100.000	100.000

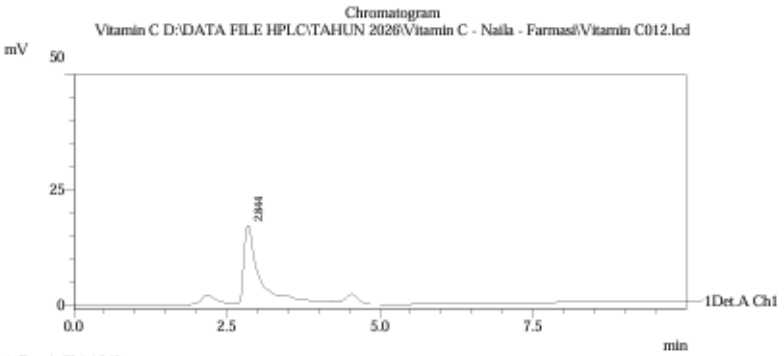
4. Kromatogram Uji Linearitas 40 ppm

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 40 ppm
Vial#	12
Injection Volume	: 10 uL
Data Filename	: Vitamin C012.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 11:14:22 AM
Data Processed	: 5/20/2026 11:56:04 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.844	220888	16571	100.000	100.000
Total		220888	16571	100.000	100.000

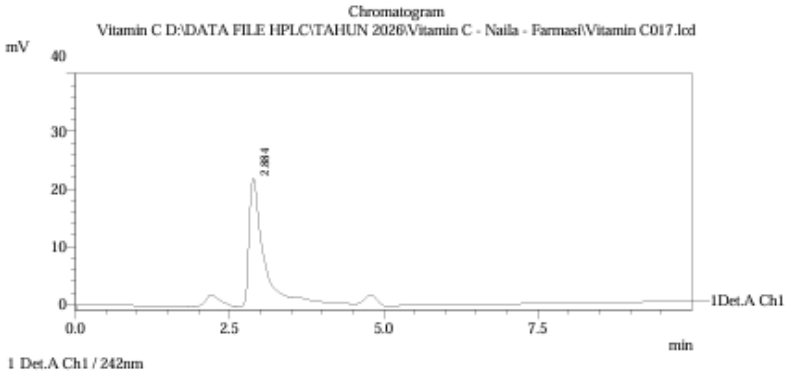
5. Kromatogram Uji Linearitas 50 ppm

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Standar Vit C
Sample ID	: 50 ppm
Vial#	17
Injection Volume	: 10 uL
Data Filename	: Vitamin C017.lcd
Method Filename	: Vitamin C -.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/20/2026 12:50:33 PM
Data Processed	: 5/20/2026 2:05:41 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.884	263462	18797	100.000	100.000
Total		263462	18797	100.000	100.000

Lampiran 4. Kromatogram Uji Akurasi

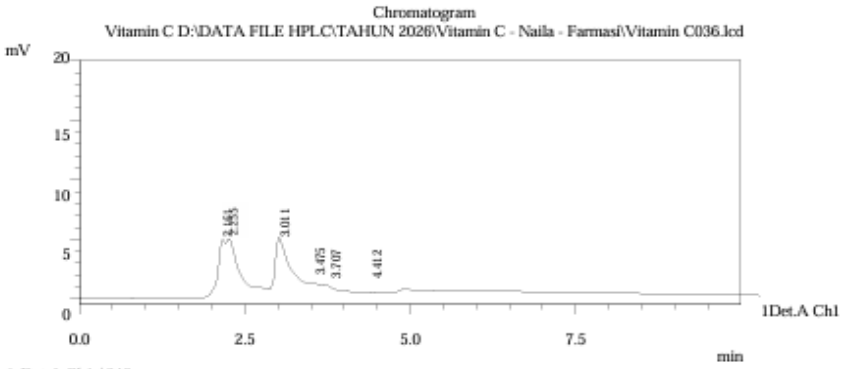
1. Kromatogram Uji Akurasi 80% Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 80%
Vial#	: 0
Injection Volume	: 10 ul.
Data Filename	: Vitamin C036.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:00:58 AM
Data Processed	: 5/25/2026 10:37:37 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.161	37693	4837	10.575	29.119
2	2.255	73185	4911	20.533	29.565
3	3.011	219771	4877	61.658	29.360
4	3.475	10676	1047	2.995	6.303
5	3.707	13587	832	3.812	5.009
6	4.412	1522	107	0.427	0.644
Tota		356434	16611	100.000	100.000

2. Kromatogram Uji Akurasi 80% Replikasi 2

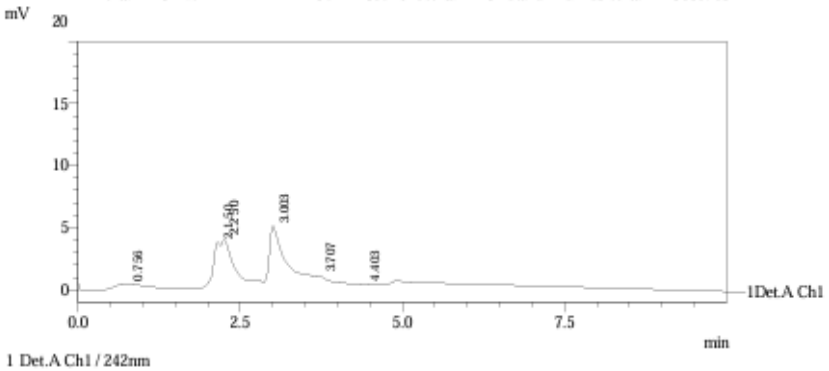
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 80%
Vial#	: 1
Injection Volume	: 10 uL
Data Filename	: Vitamin C037.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:06:20 PM
Data Processed	: 5/25/2026 10:38:15 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C037.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	0.756	15775	488	4.680	3.515
2	2.150	28231	3675	8.376	26.470
3	2.250	57494	3857	17.058	27.780
4	3.003	219440	4904	65.104	35.321
5	3.707	14350	836	4.257	6.021
6	4.403	1770	124	0.525	0.893
Tota		337060	13884	100.000	100.000

3. Kromatogram Uji Akurasi 80% Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

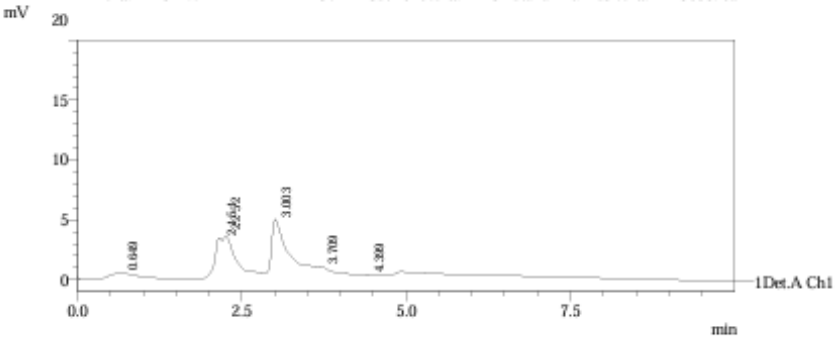
Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 80%
Vial#	: 2
Injection Volume	: 10 uL
Data Filename	: Vitamin C038.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:10:49 AM
Data Processed	: 5/25/2026 10:38:47 AM

<Chromatogram>

Chromatogram

Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C038.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	0.649	17317	518	5.223	3.900
2	2.151	25893	3425	7.810	25.785
3	2.252	52424	3525	15.812	26.538
4	3.003	219497	4872	66.203	36.678
5	3.709	14589	815	4.400	6.136
6	4.399	1830	128	0.552	0.964
Tota		331550	13283	100.000	100.000

4. Kromatogram Uji Akurasi 100% Replikasi 1

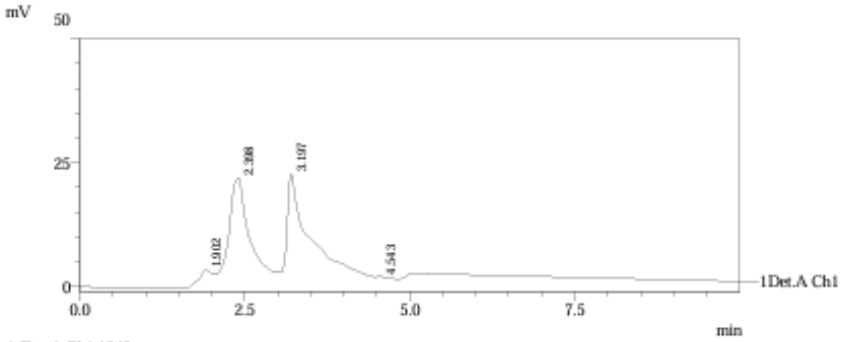
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 100%
Vial#	: 3
Injection Volume	: 10 uL
Data Filename	: Vitamin C039.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:17:05 AM
Data Processed	: 5/25/2026 10:45:15 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C039.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.902	50365	3440	10.888	7.176
2	2.398	149531	21774	32.326	45.425
3	3.197	255048	22103	55.136	46.110
4	4.543	7634	618	1.650	1.289
Total		462578	47935	100.000	100.000

5. Kromatogram Uji Akurasi 100% Replikasi 2

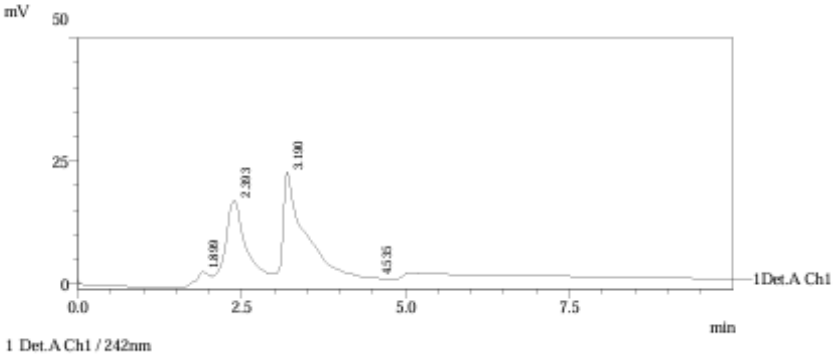
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 100%
Vial#	: 4
Injection Volume	: 10 uL
Data Filename	: Vitamin C040.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:22:27 AM
Data Processed	: 5/25/2026 10:45:31 AM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C040.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.899	42364	2932	8.787	6.822
2	2.393	183041	17304	37.964	40.262
3	3.190	255610	22629	53.016	52.650
4	4.535	1125	114	0.233	0.266
Tota		482140	42979	100.000	100.000

6. Kromatogram Uji Akurasi 100% Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

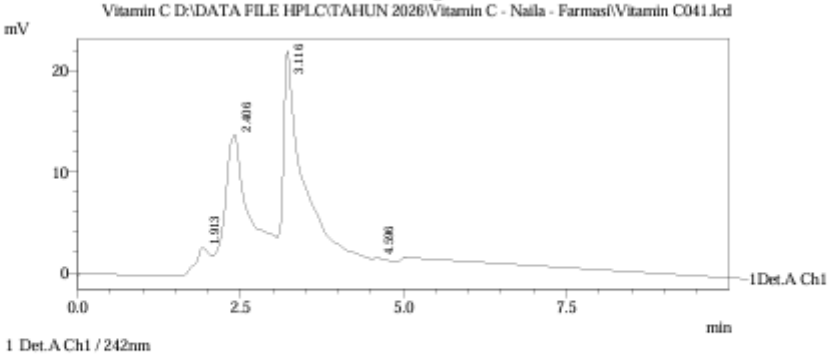
Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 100%
Vial#	: 5
Injection Volume	: 10 uL
Data Filename	: Vitamin C041.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:28:06 AM
Data Processed	: 5/25/2026 10:45:47 AM

<Chromatogram>

Chromatogram

Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C041.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.913	37671	2631	8.278	6.922
2	2.406	161146	13652	35.410	35.924
3	3.216	254801	21588	55.990	56.804
4	4.596	1465	133	0.332	0.350
Tota		455083	38004	100.000	100.000

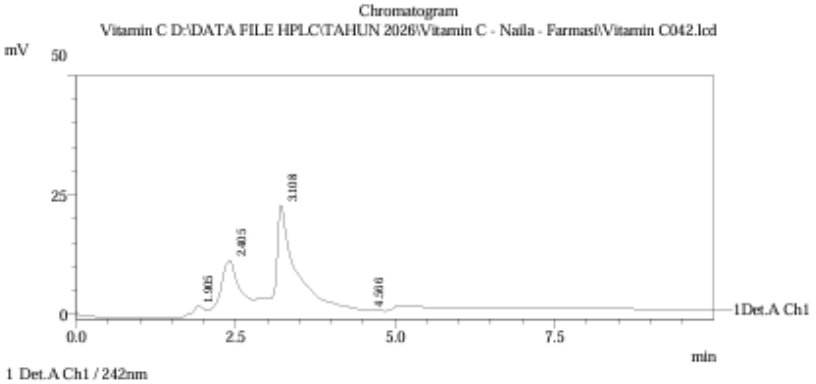
7. Kromatogram Uji Akurasi 120% Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 120%
Vial#	: 6
Injection Volume	: 10 uL
Data Filename	: Vitamin C042.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:33:25 AM
Data Processed	: 5/25/2026 10:46:02 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.905	32627	2331	5.689	6.307
2	2.405	244419	11673	42.616	31.584
3	3.108	294980	22811	51.431	61.719
4	4.566	1514	144	0.264	0.390
Tota		573540	36959	100.000	100.000

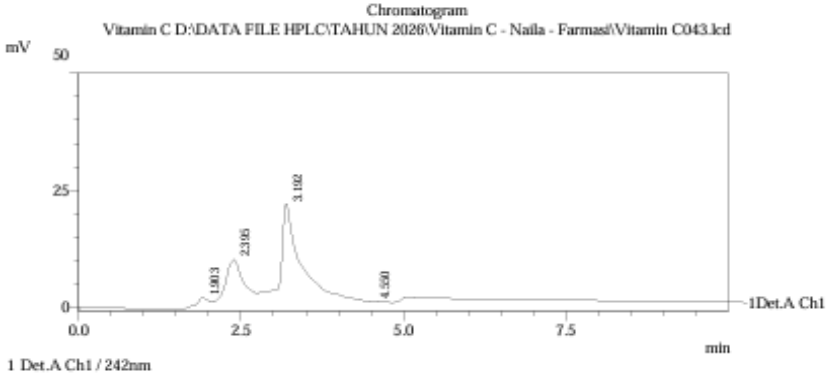
8. Kromatogram Uji Akurasi 120% Replikasi 2

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 120%
Vial#	: 7
Injection Volume	: 10 uL
Data Filename	: Vitamin C043.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:38:46 AM
Data Processed	: 5/25/2026 11:12:16 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.903	29263	2152	5.165	6.287
2	2.395	241395	10178	42.608	29.737
3	3.192	294416	21760	51.967	63.576
4	4.550	1474	137	0.260	0.400
Total		566548	34227	100.000	100.000

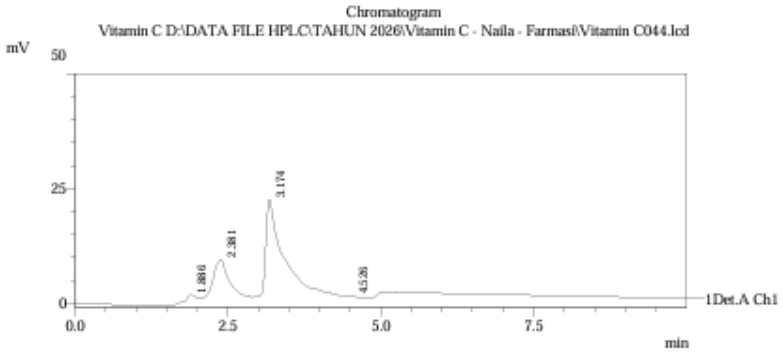
9. Kromatogram Uji Akurasi 120% Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Akurasi
Sample ID	: 120%
Vial#	: 8
Injection Volume	: 10 uL
Data Filename	: Vitamin C044.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/25/2026 10:44:07 AM
Data Processed	: 5/25/2026 10:49:11 AM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.886	27622	2056	5.278	6.068
2	2.381	199747	9478	38.167	27.977
3	3.174	294505	22223	56.273	65.602
4	4.526	1474	120	0.282	0.353
Tota		523348	33876	100.000	100.000

Lampiran 5. Kromatogram Sampel A-J

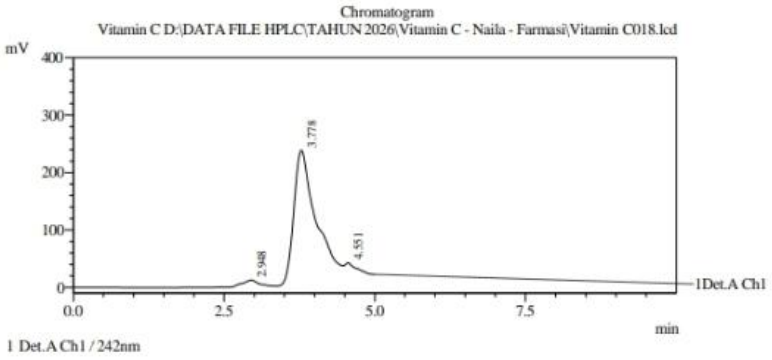
1. Kromatogram Sampel A Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: A
Vial#	0
Injection Volume	: 10 uL
Data Filename	: Vitamin C018.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 10:49:31 AM
Data Processed	: 5/21/2026 1:12:38 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.948	209185	11399	3.376	4.254
2	3.778	5907329	231159	90.973	86.271
3	4.551	366955	25386	5.651	9.474
Total		6483470	267944	100.000	100.000

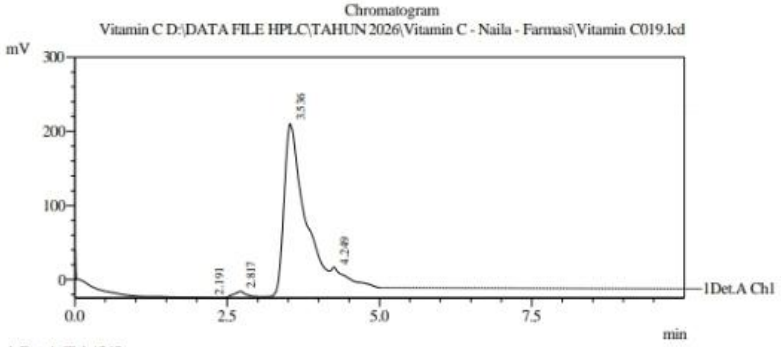
2. Kromatogram Sampel A Replikasi 2

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: A
Vial#	1
Injection Volume	: 10 uL
Data Filename	: Vitamin C019.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:08:55 AM
Data Processed	: 5/21/2026 1:16:41 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.191	1296	274	0.020	0.101
2	2.817	221727	8440	3.403	3.097
3	3.536	5432811	231757	83.384	85.046
4	4.249	649811	32036	9.973	11.756
Total		6515445	272507	100.000	100.000

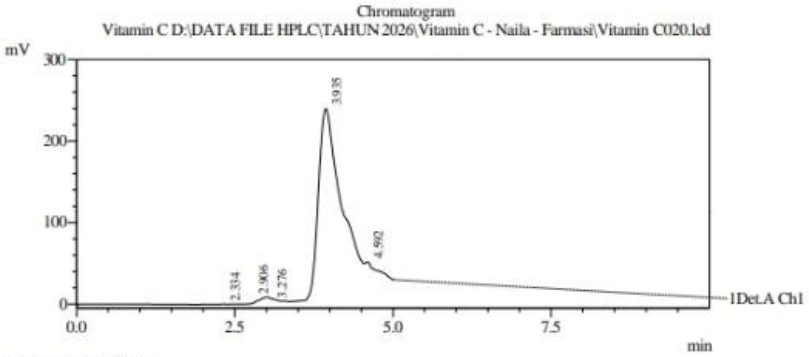
3. Kromatogram Sampel A Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: A
Vial#	2
Injection Volume	: 10 uL
Data Filename	: Vitamin C020.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:15:24 AM
Data Processed	: 5/21/2026 1:20:20 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.334	2037	135	0.033	0.051
2	2.906	210638	7008	3.391	2.650
3	3.276	4449	937	0.072	0.354
4	3.935	5628516	228760	90.612	86.508
5	4.592	365045	27599	5.877	10.437
Total		6210685	264439	100.000	100.000

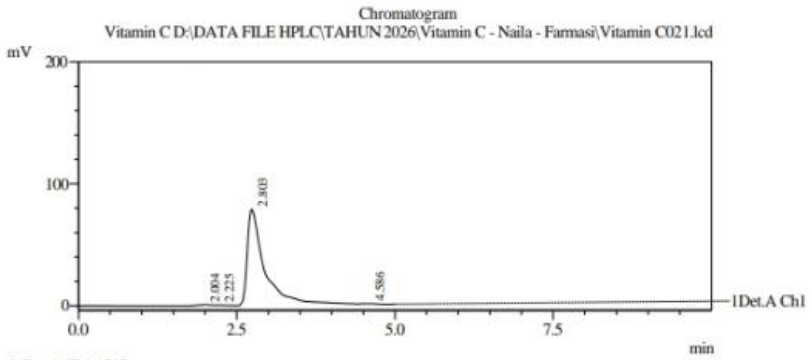
4. Kromatogram Sampel B Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: B
Vial#	3
Injection Volume	: 10 uL
Data Filename	: Vitamin C021.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:20:56 AM
Data Processed	: 5/21/2026 1:20:45 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.004	15077	2038	5.753	2.250
2	2.225	9548	1001	3.644	1.150
3	2.803	225204	86608	85.936	95.622
4	4.586	12230	926	4.667	1.022
Total		262059	90573	100.000	100.000

5. Kromatogram Sampel B Replikasi 2

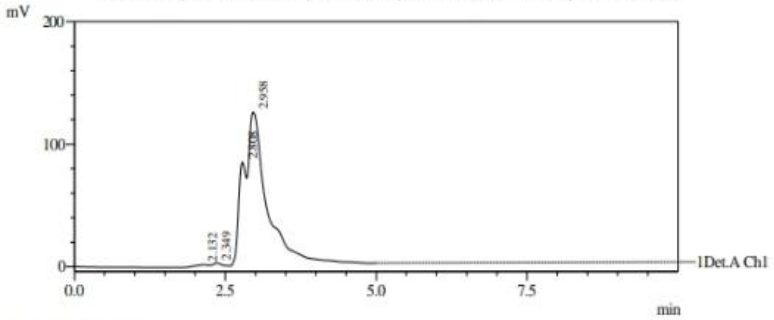
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: B
Vial#	4
Injection Volume	: 10 uL
Data Filename	: Vitamin C022.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:26:20 AM
Data Processed	: 5/21/2026 1:21:15 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C022.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.132	17539	4799	3.372	2.106
2	2.349	8291	7881	1.594	3.459
3	2.808	225517	91799	43.361	40.286
4	2.958	268943	123387	51.711	54.149
Total		520090	227866	100.000	100.000

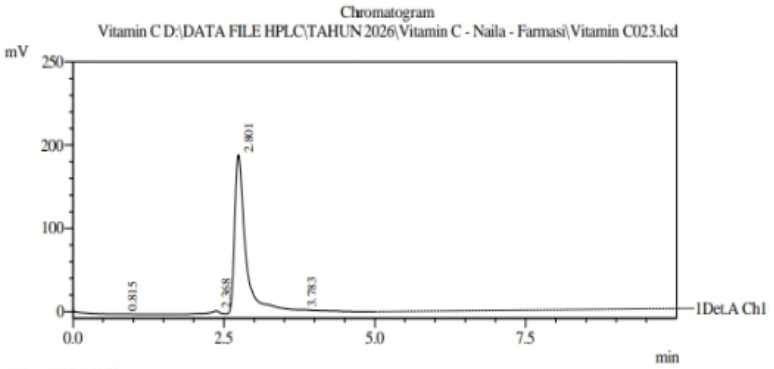
6. Kromatogram Sampel B Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: B
Vial#	5
Injection Volume	: 10 uL
Data Filename	: Vitamin C023.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:31:07 AM
Data Processed	: 5/21/2026 1:24:05 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	0.815	472	359	0.208	0.176
2	2.368	1170	7420	0.514	3.641
3	2.801	224772	195229	98.827	95.809
4	3.783	1025	781	0.451	0.383
Total		227439	970851	100.000	100.000

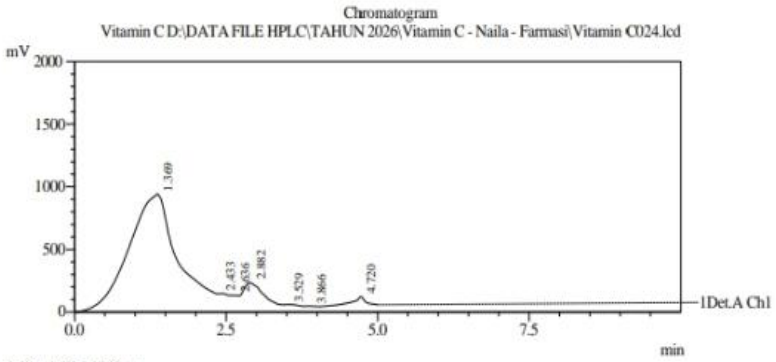
7. Kromatogram Sampel D Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: D
Vial#	6
Injection Volume	: 10 uL
Data Filename	: Vitamin C024.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:35:02 AM
Data Processed	: 5/21/2026 1:29:45 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.369	51683607	926850	98.320	63.972
2	2.433	189568	121865	0.361	8.411
3	2.636	131383	104944	0.250	7.243
4	2.882	269529	203588	0.513	14.052
5	3.529	109861	20891	0.209	1.442
6	3.866	44796	4538	0.085	0.313
7	4.720	138175	66155	0.263	4.566
Total		52566919	1448831	100.000	100.000

8. Kromatogram Sampel D Replikasi 2

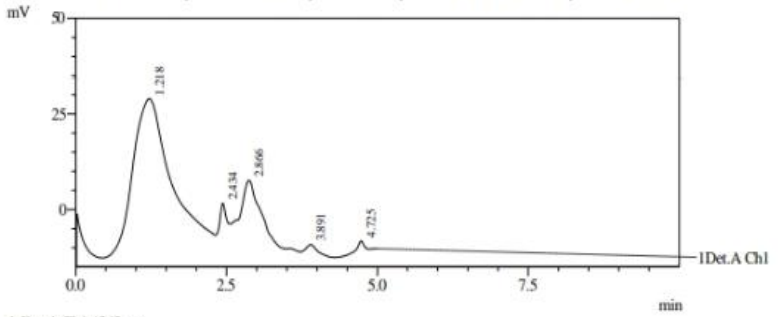
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: D
Vial#	7
Injection Volume	: 10 uL
Data Filename	: Vitamin C025.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:40:25 AM
Data Processed	: 5/21/2026 1:30:52 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C025.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.218	1940316	41646	80.050	50.681
2	2.434	149437	14242	6.165	17.332
3	2.866	262897	20155	10.846	24.528
4	3.891	50475	3346	2.082	4.072
5	4.725	20745	2784	0.856	3.388
Total		2423870	82172	100.000	100.000

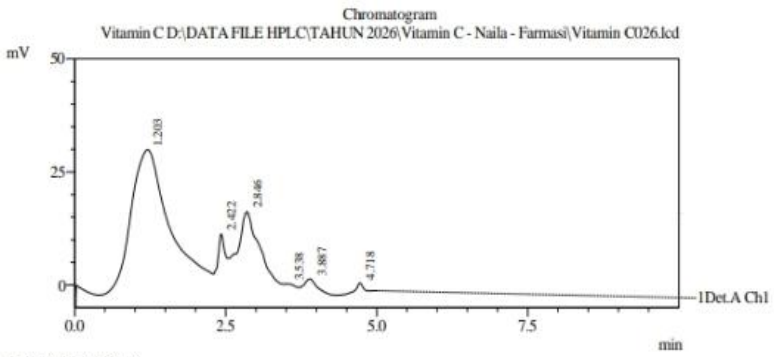
9. Kromatogram Sampel D Replikasi 3

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: D
Vial#	8
Injection Volume	: 10 uL
Data Filename	: Vitamin C026.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:45:42 AM
Data Processed	: 5/21/2026 1:31:52 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.203	1493769	32153	74.924	44.464
2	2.422	132486	13526	6.645	18.705
3	2.846	261996	18484	13.141	25.560
4	3.538	30763	2478	1.543	3.427
5	3.887	59268	3612	2.973	4.995
6	4.718	15437	2061	0.774	2.850
Total		1993719	72314	100.000	100.000

10. Kromatogram Sampel E Replikasi 1

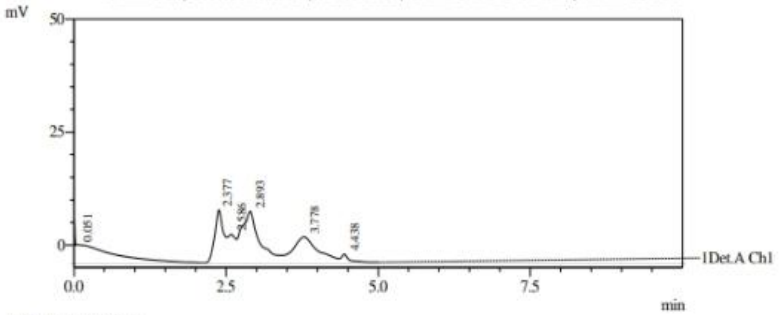
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: E
Vial#	9
Injection Volume	: 10 uL
Data Filename	: Vitamin C027.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 11:52:21 AM
Data Processed	: 5/21/2026 1:32:55 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C027.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	0.051	6981	101	1.163	0.274
2	2.377	117655	11715	19.597	31.664
3	2.586	58611	6298	9.763	17.024
4	2.893	238041	11379	39.650	30.756
5	3.778	162812	5665	27.119	15.312
6	4.438	16260	1839	2.708	4.970
Total		600361	36998	100.000	100.000

11. Kromatogram Sampel E Replikasi 2

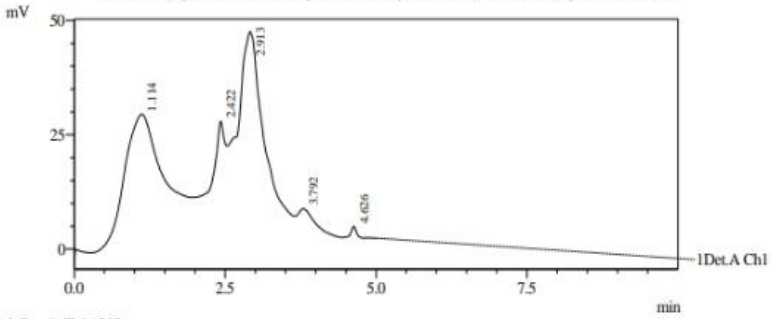
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: E
Vial#	10
Injection Volume	: 10 uL
Data Filename	: Vitamin C028.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:00:04 PM
Data Processed	: 5/21/2026 1:33:31 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C028.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.114	229769	29699	28.860	26.165
2	2.422	158035	27267	19.850	24.022
3	2.913	236338	46516	29.6855	40.981
4	3.792	169854	7230	21.335	6.370
5	4.626	21949	2796	2.757	2.463
Total		796145	113509	100.000	100.000

12. Kromatogram Sampel E Replikasi 3

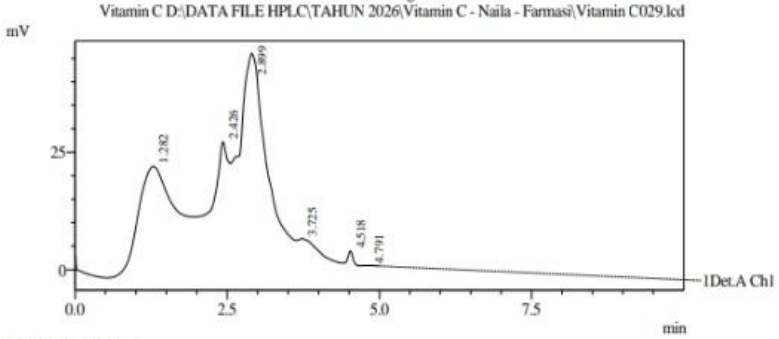
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: E
Vial#	11
Injection Volume	: 10 uL
Data Filename	: Vitamin C029.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:06:18 PM
Data Processed	: 5/21/2026 1:34:50 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C029.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.282	201456	23320	28.484	21.656
2	2.426	169664	27871	23.989	25.883
3	2.899	240611	46442	34.021	43.128
4	3.725	69732	6476	9.859	6.014
5	4.518	23676	3400	3.348	3.158
6	4.791	2112	173	0.299	0.161
Total		707251	107682	100.000	100.000

13. Kromatogram Sampel G Replikasi 1

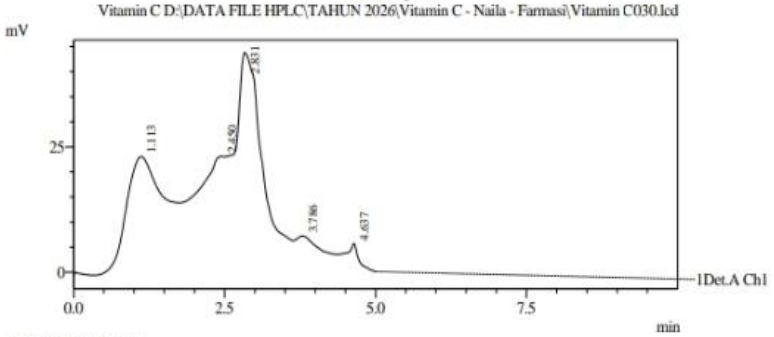
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: G
Vial#	12
Injection Volume	: 10 uL
Data Filename	: Vitamin C030.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:11:41 PM
Data Processed	: 5/21/2026 1:35:22 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C030.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.113	206345	23527	35.799	22.724
2	2.450	95266	23286	16.528	22.491
3	2.831	228856	43951	39.704	42.451
4	3.786	31570	7220	5.477	6.973
5	4.637	14368	5551	2.493	5.361
Total		576405	103535	100.000	100.000

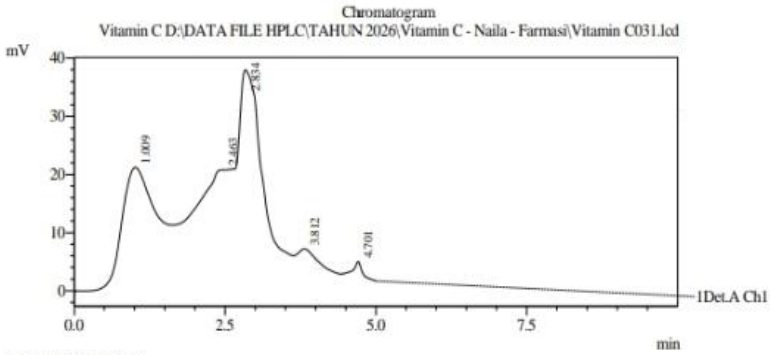
14. Kromatogram Sampel G Replikasi 2

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: G
Vial#	13
Injection Volume	: 10 uL
Data Filename	: Vitamin C031.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:17:08 PM
Data Processed	: 5/21/2026 1:36:10 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.009	86152	20955	13.732	24.069
2	2.463	79007	19951	12.593	22.915
3	2.834	242718	36986	38.688	42.482
4	3.812	172334	5853	27.470	6.723
5	4.701	47156	3318	7.516	3.811
Total		627367	87064	100.000	100.000

15. Kromatogram Sampel G Replikasi 3

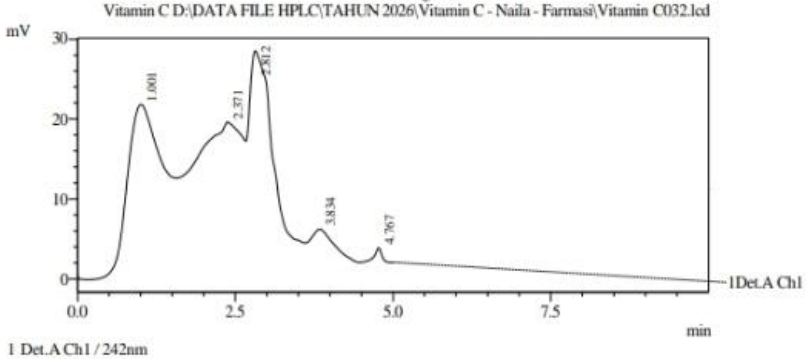
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: G
Vial#	14
Injection Volume	: 10 uL
Data Filename	: Vitamin C032.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:22:35 PM
Data Processed	: 5/21/2026 1:37:38 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C032.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	1.001	262866	21539	24.492	28.992
2	2.371	503681	18742	46.929	25.228
3	2.812	257838	27447	24.023	36.944
4	3.834	32173	4663	2.998	6.277
5	4.767	18519	1901	1.725	2.559
Total		1073277	74292	100.000	100.000

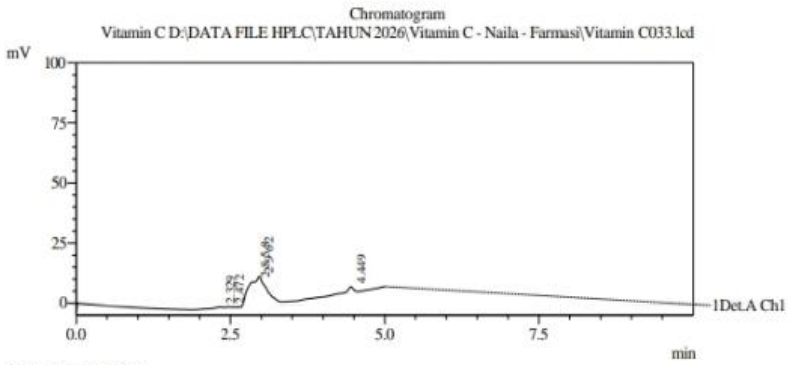
16. Kromatogram Sampel J Replikasi 1

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: J
Vial#	15
Injection Volume	: 10 uL
Data Filename	: Vitamin C033.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:28:31 PM
Data Processed	: 5/21/2026 1:39:00 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.329	4597	470	1.172	1.899
2	2.472	2136	311	0.544	1.257
3	2.858	126116	9815	32.140	39.645
4	2.962	241138	11765	61.452	47.523
5	4.449	18411	2396	4.692	9.677
Total		392398	24758	100.000	100.000

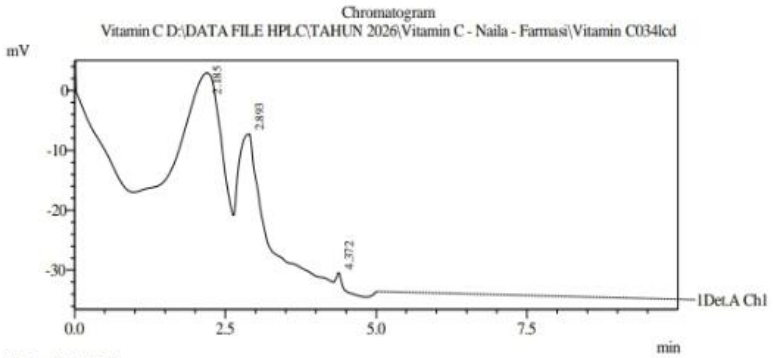
17. Kromatogram Sampel J Replikasi 2

==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: J
Vial#	16
Injection Volume	: 10 uL
Data Filename	: Vitamin C034.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 12:34:20 PM
Data Processed	: 5/21/2026 1:39:20 PM

<Chromatogram>



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.185	623432	22746	82.088	55.512
2	2.893	125182	16056	16.483	39.186
3	4.372	10852	2173	1.429	5.302
Total		759466	40974	100.000	100.000

18. Kromatogram Sampel J Replikasi 3

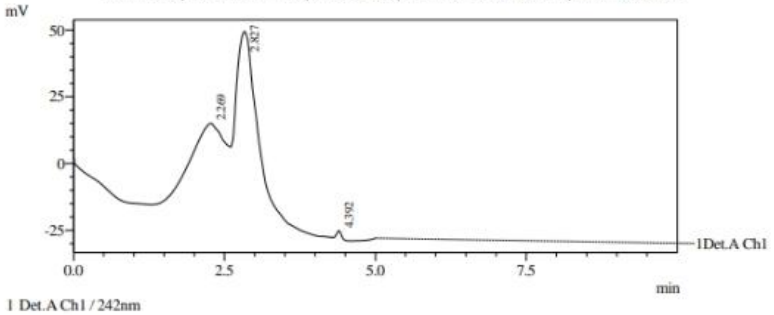
==== POLITEKNIK KESEHATAN BANDUNG ====
UNIT LABORATORIUM - LABORATORIUM TERPADU

Sample Information

Acquired by	: Admin
Sample Name	: Sampel
Sample ID	: J
Vial#	17
Injection Volume	: 10 uL
Data Filename	: Vitamin C035.lcd
Method Filename	: Vitamin C.lcm
Batch Filename	: Vitamin C - Naila - Farmasi.lcb
Report Filename	: Complete Single NEW.lcr
Date Acquired	: 5/21/2026 1:40:08 PM
Data Processed	: 5/21/2026 1:39:37 PM

<Chromatogram>

Chromatogram
Vitamin C D:\DATA FILE HPLC\TAHUN 2026\Vitamin C - Naila - Farmasi\Vitamin C035.lcd



1 Det.A Ch1 / 242nm

PeakTable

Detector A Ch1 242nm

Peak#	Ret. Time	Area	Height	Area %	Height %
1	2.269	146653	14675	53.427	22.547
2	2.827	122567	47411	44.652	72.844
3	4.392	5273	3000	1.921	4.609
Total		274493	65086	100.000	100.000

Lampiran 6. Perhitungan Uji Kesesuaian Sistem

Replikasi	Rt (menit)	(yi-y)	(yi-y)²	Luas Area	(yi-y)	(yi-y)²	Tf	K	N plates	Rs
1	2,84	0,000	0,0000	188863	-49,5	2450,25	1,940	2,216	1155,221	0,000
2	2,84	0,000	0,0000	189295	382,5	146306,25	1,930	2,190	1200,684	0,000
3	2,82	-0,020	0,0004	189888	975,5	951600,25	1,858	2,123	1311,835	0,000
4	2,83	-0,010	0,0001	188878	-34,5	1190,25	1,778	1,919	1257,130	0,000
5	2,85	0,010	0,0001	187990	-922,5	851006,25	2,013	2,227	1283,962	0,000
6	2,84	0,000	0,0000	188561	-351,5	123552,25	1,980	2,207	1267,138	0,000
Rata- rata	2,84			188912,5			1,917	2,147	1240,911	0,000
Total	17,02		0,0006	1133475		2076105,5				
SD	0,01			644,3765						
Syarat	< 2			< 2			*≤ 2*	> 2	> 1000	
Hasil	0,36%			0,34%						
Kesimpulan	MS			MS			MS	MS	MS	MS

Rumus:

$$SD = \frac{\sqrt{\sum(y-yi)^2}}{n-1}$$

$$\%RSD = \frac{SD}{x}\ x\ 100\%$$

Waktu retensi

$$SD = \frac{\sqrt{\sum(y-yi)^2}}{n-1}$$

$$SD = \frac{\sqrt{0,0006}}{6-1}$$

$$= 0,01$$

$$\%RSD = \frac{0,01}{2,84}\ x\ 100\%$$

$$= 0,36\%$$

Luas Area

$$SD = \frac{\sqrt{\sum(y-yi)^2}}{n-1}$$

$$SD = \frac{\sqrt{2076105,5}}{6-1}$$

$$= 644,3765$$

$$\%RSD = \frac{644,3765}{188912,5}\ x\ 100\%$$

$$= 0,34\%$$

Lampiran 7. Perhitungan Uji Linearitas

Konsentrasi (x)	Luas Area (y)	(xi − x̄)	(xi − x̄)²	(yi− ȳ)	(yi− ȳ)²	(xi − x̄) (yi− ȳ)
10	121095	-20	400	-68127,2	4641315379,84	1362544
20	151704	-10	100	-37518,2	1407615331,24	375182
30	188962	0	0	-260,2	67704,04	0
40	220888	10	100	31665,8	1002722891,64	316658
50	263462	20	400	74239,8	5511547904,04	1484796
Rata-rata	189222,2	0	200	0	2512653842,16	707836
Total	946111	0	1000	0	12563269210,8	3539180

$$b = \frac{\Sigma(xi - \bar{x})(yi - \bar{y})}{\Sigma(xi - \bar{x})^2}$$

$$b = \frac{3.539.180}{1000}$$

b = 3539,2

a = ȳ − bx

a = 189222,2 − (3539,2 × 30)

a = 189222,2 − 106176

a = 83047

$$r = \frac{\Sigma(xi - \bar{x})(yi - \bar{y})}{\sqrt{[\Sigma(xi - \bar{x})^2 \Sigma(yi - \bar{y})^2]}}$$

$$r = \frac{3.539.180}{\sqrt{(1000 \times 12.563.269.210{,}8)}}$$

$$r = \frac{3.539.180}{\sqrt{12.563.269.210.800}}$$

$$r = \frac{3.539.180}{3.544.470{,}23}$$

r = 0,9985

$r^2 = (0{,}9985)^2$

$r^2 = 0{,}9970$

Lampiran 8. Perhitungan LOD dan Batas LOQ

Konsentrasi (ppm)	Luas Area (y)	yi	(y-yi)	(y-yi)²
10	121095	118439	2656	7054336
20	151704	153831	-2127	4524129
30	188962	189223	-261	68121
40	220888	224615	-3272	13890529
50	263462	260007	3455	11937025
Rata- rata	189222.2	189223	90,2	7494828
Total	946111	946115	451	37474140

$$S(y/x)^2 = \frac{\Sigma(y-yi)^2}{(n-1)}$$

$$S(y/x)^2 = \frac{37474140}{(5-1)}$$

$S(y/x)^2 = 9368535$

$S(y/x) = \sqrt{S(y/x)^2}$

$S(y/x) = \sqrt{9368535}$

$S(y/x) = 3060{,}806$

$$LoD = \frac{(3{,}3 \times S(y/x))}{b}$$

$$LoD = \frac{(3{,}3 \times 3060{,}806)}{3539{,}2}$$

$LoD = 2{,}853939$ ppm

$$LoQ = \frac{(10 \times S(y/x))}{b}$$

$$LoQ = \frac{(10 \times 3060{,}806)}{3539.2}$$

$LoQ = 8{,}6483$ ppm

Lampiran 9. Perhitungan Uji Presisi

Replikasi	Luas Area	(xi − x̄)	(xi − x̄)²	Konsentrasi	(xi − x̄)	(xi − x̄)²
1	188863	-49,5	2450,25	29,89828	-0,01399	0,0001957201
2	189295	382,5	146306,25	30,02034	0,10807	0,0116791249
3	189888	975,5	951600,25	30,18790	0,27563	0,0759718969
4	188878	-34,5	1190,25	29,90252	-0,00975	0,0000950625
5	187990	-922,5	851006,25	29,65162	-0,26065	0,0679384225
6	188561	-351,5	123552,25	29,81295	-0,09932	0,0098644624
Rata–rata	188912,5			29,91227		
Jumlah	1133475		2076105,5	17947361		0,1657446893

Luas Area

$SD = \frac{\sqrt{\sum(x-\bar{x})^2}}{n-1}$

$SD = \frac{\sqrt{2076105,5}}{6-1}$

SD = 644,377

$\%RSD = \frac{SD}{x}\ x\ 100$

$\%RSD = \frac{644,377}{188912,5}\ x\ 100\%$

%RSD = 0,34%

Konsentrasi

$SD = \frac{\sqrt{\sum(x-\bar{x})^2}}{n-1}$

$SD = \frac{\sqrt{0.1657446893}}{6-1}$

SD = 0,18207

$\%RSD = \frac{SD}{x}\ x\ 100$

$\%RSD = \frac{0,18207}{29,91227}\ x\ 100\%$

%RSD = 0,61%

Lampiran 10. Data Uji Akurasi

Konsentrasi Uji (ppm)	Luas Area	Konsentrasi (ppm)	*%Recovery*	Rata-Rata (%)
30	219771	38,631	89,60	89,42
	219440	38,538	89,29	
	219497	89,554	89,35	
40	255048	48,599	92,12	92,20
	255610	48,758	92,52	
	254801	48,529	91,95	
50	294980	59,882	96,26	96,07
	294416	59,722	95,94	
	294505	59,747	95,99	

Perhitungan Uji Akurasi

Persamaan regresi linear: y= 3539,2x + 83047

Konsentrasi sampel yang digunakan: 11,747 ppm

	Akurasi 80%	
Replikasi 1	Replikasi 2	Replikasi 3
Cf = $\frac{y-a}{b}$ = $\frac{219771-83047}{3539,2}$ = 38,631 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{38,631-11,747}{30}\ x\ 100\%$ = 89,61%	Cf = $\frac{y-a}{b}$ = $\frac{219440-83047}{3539,2}$ = 38,538 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{38,538-11,747}{30}\ x\ 100\%$ = 89,30%	Cf = $\frac{y-a}{b}$ = $\frac{219497-83047}{3539,2}$ = 38,554 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{38,554-11,747}{30}\ x\ 100\%$ = 89,36%
Rata-rata %Recovery 89,42%		
	Akurasi 100%	
Replikasi 1	Replikasi 2	Replikasi 3
Cf = $\frac{y-a}{b}$ = $\frac{255048-83047}{3539,2}$ = 48,599 ppm	Cf = $\frac{y-a}{b}$ = $\frac{255610-83047}{3539,2}$ = 48,758 ppm	Cf = $\frac{y-a}{b}$ = $\frac{254801-83047}{3539,2}$ = 48,529 ppm

%Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{48,599\ -11,747}{40}\ x\ 100\%$ = 92,13%	%Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{48,758-11,747}{40}\ x\ 100\%$ = 92,53%	%Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{48,529-11,747}{40}\ x\ 100\%$ = 91,96%
Rata-rata %Recovery 92,20%		
	Akurasi 120%	
Replikasi 1	Replikasi 2	Replikasi 3
Cf = $\frac{y-a}{b}$ = $\frac{294980-83047}{3539,2}$ = 59,882 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{59,882-11,747}{50}\ x\ 100\%$ = 96,27%	Cf = $\frac{y-a}{b}$ = $\frac{294416-83047}{3539,2}$ = 59,722 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{59,722-11,747}{50}\ x\ 100\%$ = 95,95%	Cf = $\frac{y-a}{b}$ = $\frac{294505-83047}{3539,2}$ = 59,747 ppm %Rec= $\frac{Cf-CA}{C*A}\ x\ 100\%$ = $\frac{59,747-11,747}{50}\ x\ 100\%$ = 96,00%
Rata-rata %Recovery 96,07%		
Rata-rata dari 3 %Recovery 92,57%		

Lampiran 11. Perhitungan Kadar Vitamin C dalam Sampel

Sampel	Replikasi	Luas Area
A	1	219185
	2	221727
	3	210638
Rata-Rata		217183,33
B	1	225204
	2	225517
	3	224772
Rata-Rata		225164,33
D	1	269529
	2	262897
	3	261996
Rata-Rata		264807,33
E	1	238041
	2	236338
	3	240611
Rata-Rata		238330
G	1	228856
	2	242718
	3	257838
Rata-Rata		243137,33
J	1	126116
	2	125182
	3	122567
Rata-Rata		124621,67

1. Sampel A Replikasi 1

Luas area yang diperoleh: 219185

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{219185-83047}{3539,2}$

= 38, 466 ppm / 38, 466 mg/L

Kadar = Konsentrasi x Volume pelarut

= 38,466 mg/L x 0,05 L

= 1,92 mg

Pengenceran 20 ml = 1,92 mg x 20 = 38,40 mg

%Kadar =$\frac{38,40\ mg}{500\ mg}\ x\ 100\%$

= 7,68%

2. Sampel A Replikasi 2

Luas area yang diperoleh: 221727

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{221727-83047}{3539,2}$

= 39,184 ppm

= 39,184 mg/L

Kadar = Konsentrasi x Volume pelarut

= 39,184 mg/L x 0,05 L

= 1,96 mg

Pengenceran 20 ml = 1,96 mg x 20 = 39,20 mg

%Kadar =$\frac{39,20\ mg}{500\ mg}\ x\ 100\%$

= 7,84%

3. Sampel A Replikasi 3

Luas area yang diperoleh: 210638

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{210638-83047}{3539,2}$

= 36,051 ppm

= 36,051 mg/L

Kadar = Konsentrasi x Volume pelarut

= 36,051 mg/L x 0,05 L

= 1,80 mg

Pengenceran 20 ml = 1,80 mg x 20 = 36 mg

%Kadar =$\frac{36\ mg}{500\ mg}\ x\ 100\%$

= 7,20%

%Rata- rata kadar sampel A: $\frac{7,68\%+7,84\%+7,20\%}{3} = 7,57\%$

4. Sampel B Replikasi 1

Luas area yang diperoleh: 225204

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{225204-83047}{3539,2}$

= 40,166 ppm

= 40,166 mg/L

Kadar = Konsentrasi x Volume pelarut

= 40,166 mg/L x 0,05 L

= 2,01 mg

Pengenceran 20 ml = 2,01 mg x 20 = 40,20 mg

%Kadar = $\frac{40{,}20\ mg}{500\ mg}\ x\ 100\%$

= 8,04%

5. Sampel B Replikasi 2

Luas area yang diperoleh: 225517

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{225517-83047}{3539{,}2}$

= 40,255 ppm

= 40,255 mg/L

Kadar = Konsentrasi x Volume pelarut

= 40,255 mg/L x 0,05 L

= 2,01 mg

Pengenceran 20 ml = 2,01 mg x 20 = 40,20 mg

%Kadar = $\frac{40{,}20\ mg}{500\ mg}\ x\ 100\%$

= 8,04%

6. Sampel B Replikasi 3

Luas area yang diperoleh: 224772

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{224772-83047}{3539,2}$

= 40,044 ppm

= 40,044 mg/L

Kadar = Konsentrasi x Volume pelarut

= 40,044 mg/L x 0,05 L

= 2,00 mg

Pengenceran 20 ml = 2,00 mg x 20 = 40 mg

%Kadar =$\frac{40\ mg}{500\ mg}\ x\ 100\%$

= 8,00%

%Rata- rata kadar sampel B: $\frac{8,04\%+8,04\%+8\%}{3} = 8,03\%$

7. Sampel D Replikasi 1

Luas area yang diperoleh: 269529

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{269529-83047}{3539,2}$

= 52,690 ppm

= 52,690 mg/L

Kadar = Konsentrasi x Volume pelarut

= 52,690 mg/L x 0,05 L

= 2,63 mg

Pengenceran 20 ml = 2,63 mg x 20 = 52,60 mg

%Kadar = $\frac{52{,}60\ mg}{500\ mg}\ x\ 100\%$

= 10,52%

8. Sampel D Replikasi 2

Luas area yang diperoleh: 262897

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{262897-83047}{3539{,}2}$

= 50,817 ppm

= 50,817 mg/L

Kadar = Konsentrasi x Volume pelarut

= 50,817 mg/L x 0,05 L

= 2,54 mg

Pengenceran 20 ml = 2,54 mg x 20 = 50,80 mg

%Kadar = $\frac{50{,}80\ mg}{500\ mg}\ x\ 100\%$

= 10,16%

9. Sampel D Replikasi 3

Luas area yang diperoleh: 261996

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{261996-83047}{3539,2}$

= 50,562 ppm

= 50,562 mg/L

Kadar = Konsentrasi x Volume pelarut

= 50,562 mg/L x 0,05 L

= 2,53 mg

Pengenceran 20 ml = 2,53 mg x 20 = 50,60 mg

%Kadar =$\frac{50,60\ mg}{500\ mg}\ x\ 100\%$

= 10,12%

%Rata- rata kadar sampel D: $\frac{10,52\%+10,16\%+10,12\%}{3} = 10,27\%$

10. Sampel E Replikasi 1

Luas area yang diperoleh: 238041

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{238041-83047}{3539,2}$

= 43,794 ppm

= 43,794 mg/L

Kadar = Konsentrasi x Volume pelarut

= 43,794 mg/L x 0,05 L

= 2,19 mg

Pengenceran 20 ml = 2,19 mg x 20 = 43,80 mg

%Kadar = $\frac{43{,}80\ mg}{500\ mg}\ x\ 100\%$

= 8,76%

11. Sampel E Replikasi 2

Luas area yang diperoleh: 236338

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{236338-83047}{3539{,}2}$

= 43,312 ppm

= 43,312 mg/L

Kadar = Konsentrasi x Volume pelarut

= 43,312 mg/L x 0,05 L

= 2,17 mg

Pengenceran 20 ml = 2,17 mg x 20 = 43,40 mg

%Kadar = $\frac{43{,}40\ mg}{500\ mg}\ x\ 100\%$

= 8,68%

12. Sampel E Replikasi 3

Luas area yang diperoleh: 240611

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{240611-83047}{3539,2}$

= 44,520 ppm

= 44,520 mg/L

Kadar = Konsentrasi x Volume pelarut

= 44,520 mg/L x 0,05 L

= 2,23 mg

Pengenceran 20 ml = 2,23 mg x 20 = 44,60 mg

%Kadar =$\frac{44,60\ mg}{500\ mg}\ x\ 100\%$

= 8,92%

%Rata- rata kadar sampel E: $\frac{8,76\%+8,68\%+8,92\%}{3} = 8,79\%$

13. Sampel G Replikasi 1

Luas area yang diperoleh: 228856

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{228856-83047}{3539,2}$

= 41,198 ppm

= 41,198 mg/L

Kadar = Konsentrasi x Volume pelarut

= 41,198 mg/L x 0,05 L

= 2,06 mg

Pengenceran 20 ml = 2,06 mg x 20 = 41,20 mg

%Kadar =$\frac{41{,}20\ mg}{500\ mg}\ x\ 100\%$

= 8,24%

14. Sampel G Replikasi 2

Luas area yang diperoleh: 242718

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{242718-83047}{3539{,}2}$

= 45,115 ppm

= 45,115 mg/L

Kadar = Konsentrasi x Volume pelarut

= 45,115 mg/L x 0,05 L

= 2,26 mg

Pengenceran 20 ml = 2,26 mg x 20 = 45,20 mg

%Kadar =$\frac{45{,}20\ mg}{500\ mg}\ x\ 100\%$

= 9,04%

15. Sampel G Replikasi 3

Luas area yang diperoleh: 257838

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

$= \frac{257838-83047}{3539,2}$

= 49,387 ppm

= 49,387 mg/L

Kadar = Konsentrasi x Volume pelarut

= 49,387 mg/L x 0,05 L

= 2,47 mg

Pengenceran 20 ml = 2,47 mg x 20 = 49,40 mg

%Kadar $= \frac{49,40\ mg}{500\ mg}\ x\ 100\%$

= 9,88%

%Rata- rata kadar sampel G: $\frac{8,24\%+9,04\%+9,88\%}{3} = 9,05\%$

16. Sampel J Replikasi 1

Luas area yang diperoleh: 126116

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

$= \frac{126116\ -83047}{3539,2}$

= 12,169 ppm

= 12,169 mg/L

Kadar = Konsentrasi x Volume pelarut

= 12,169 mg/L x 0,05 L

= 0,61 mg

Pengenceran 20 ml = 0,61 mg x 20 = 12,20 mg

%Kadar $= \frac{12,20\ mg}{500\ mg}\ x\ 100\%$ = 2,44%

17. Sampel J Replikasi 2

Luas area yang diperoleh: 125182

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{125182-83047}{3539,2}$

= 11,905 ppm

= 11,905 mg/L

Kadar = Konsentrasi x Volume pelarut

= 11,905 mg/L x 0,05 L

= 0,60 mg

Pengenceran 20 ml = 0,60 mg x 20 = 12 mg

%Kadar =$\frac{12\ mg}{500\ mg}\ x\ 100\%$

= 2,40%

18. Sampel J Replikasi 3

Luas area yang diperoleh: 122567

Bobot penimbangan sampel: 500 mg

Volume pelarut: 50 ml

Perhitungan Konsentrasi (ppm/mg/L):

x = $\frac{y-a}{b}$

= $\frac{122567-83047}{3539,2}$

=11,166 ppm

= 11,166 mg/L

Kadar = Konsentrasi x Volume pelarut

= 11,166 mg/L x 0,05 L

= 0,56 mg

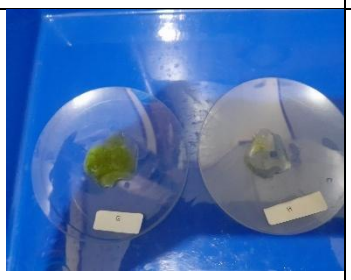
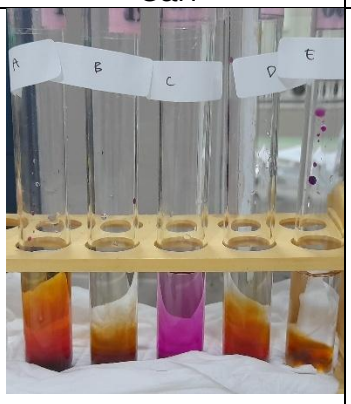
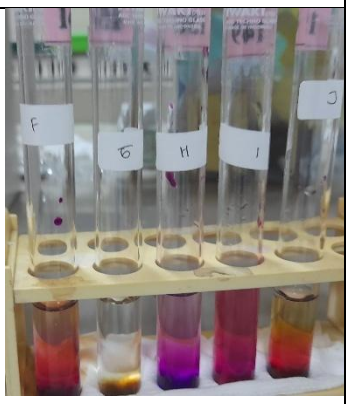
Pengenceran 20 ml = 0,56 mg x 20 = 11,20 mg

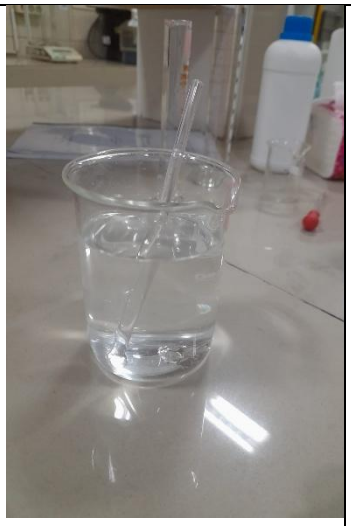
%Kadar = $\frac{11{,}20\ mg}{500\ mg}\ x\ 100\%$

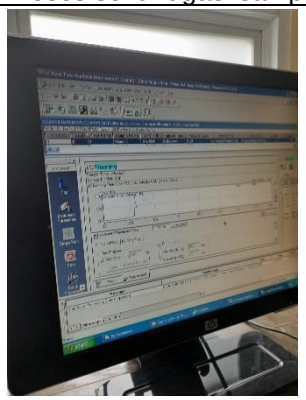
= 2,24%

%Rata- rata kadar sampel J: $\frac{2{,}44\%+2{,}40\%+2{,}24\%}{3} = 2{,}36\%$

Lampiran 12. Dokumentasi Kegiatan Penelitian

 Identifikasi sampel A-E	 Identifikasi sampel F-J	 Uji organoleptik sampel A-C
 Uji organoleptik sampel D-F	 Uji organoleptik sampel G&H	 Uji organoleptik sampel I&J
 Uji reaksi warna standar vitamin C dengan $KMNO_4$	 Uji reaksi warna sampel A-E dengan $KMNO_4$	 Uji reaksi warna sampel F-J dengan $KMNO_4$

		
Penimbangan standar vitamin C	Pembuatan pelarut	Penimbangan sampel A
		
Penimbangan sampel B	Penimbangan sampel D	Penimbangan sampel E

		
Penimbangan sampel G	Penimbangan sampel J	Proses sentrifugasi sampel
		
Penyaringan Sampel	Kondisi operasional KCKT	Proses *Running* pada KCKT