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LAMPIRAN

Lampiran 1. Surat Keterangan Kode Etik Penelitian



YAYASAN HARAPAN BUNDA BATAM
INSTITUT KESEHATAN MITRA BUNDA
KOMITE ETIK PENELITIAN

Jl. Seraya No 1 KOTA BATAM Telp/Fax (0778) 429431, website : <http://ikmb.ac.id>
SURAT KEPUTUSAN MENTERI PENDIDIKAN DAN KEBUDAYAAN REPUBLIK INDONESIA No. 284/M/2020

KOMITE ETIK PENELITIAN
INSTITUT KESEHATAN MITRA BUNDA
THE RESEARCH ETHICAL COMMITTEE INSTITUT KESEHATAN MITRA BUNDA

SURAT KETERANGAN
ETHICAL APPROVAL
No. 008/K/KEP/IKMB/VII/2025

Komite Etik Penelitian Institut Kesehatan Mitra Bunda, menyatakan dengan ini bahwa penelitian dengan judul :

The Research Ethical Committee of Institut Kesehatan Mitra Bunda states hereby that the following proposal :

"Analisis Kadar Asam Salisilat Dengan Metode Spektrofotometri Uv-Vis Pada Sediaan Pembersih Wajah (Facial Wash) Di Toko Kosmetik Jodoh Kota Batam"

"Analysis of Salicylic Acid Levels by Uv-Vis Spectrophotometric Method in Facial Wash Preparations at Jodoh Cosmetic Shop in Batam City"

Peneliti Utama : Sarah Enitra Yani
Principal Investigator

Lokasi Penelitian : Laboratorium Kimia Farmasi
Research Location

Waktu Penelitian : Juni - Juli 2025
Time Schedule

Responden/Subjek Penelitian : 5 Produk *Facial Wash*


Telah melalui prosedur kaji etik dan dinyatakan layak untuk dilaksanakan
Has proceeded the ethical assessment procedure and been approved for implementation


Batam, 3 Juli 2025
Ketua / *Chairman,*


M. M. M. Rashed, M.K.M.

Gambar 1. Surat Keterangan Kode Etik Penelitian

Lampiran 2. Sertifikat Analisis Asam Salisilat






**LOBA
Chemie**
LABORATORY REAGENTS
& FINE CHEMICALS
ISO 9001-2015 CERTIFIED

CERTIFICATE OF ANALYSIS


Product Name : SALICYLIC ACID 99.5% AR		
Lot No. : Sample COA	Release Date : 06-Jan-2025	
Mol. Formula : C7H6O3	Mol. Weight : 138.12	
Code No. : 05640	CAS No. : 69-72-7	
Mfg. Date : Jan-2025	Exp. Date : Dec-2029	
HAZ. / P.G. : -	UN No. : -	

Sr.	Tests	Specifications	Results
1	Appearance	A white powder.	A white powder.
2	Assay	Min 99.5%	100.1%
3	Melting point	159 - 161 deg C	159.4°C
4	Alcohol insoluble matter	Max 0.005%	<0.005%
5	Sulphated ash	Max 0.05%	0.003%
6	Chloride (Cl)	Max 0.001%	0.001%
7	Sulphate (SO ₄)	Max 0.02%	0.01%
8	Copper (Cu)	Max 0.0002%	0.00003%
9	Iron (Fe)	Max 0.0002%	0.0002%
10	Lead (Pb)	Max 0.0002%	Not detected

CONCLUSION - This above product complies as per the specifications of LOBA CHEMIE PVT. LTD.



Monil Tandell
Chemist



Shashikant Gaikwad
QC Manager

LOBA CHEMIE PVT. LTD.

Mfg. Add.: LOBA Chemie Pvt. Ltd. Plot No. D-22, MIDC Tarapur, Boisar, Tal. & Dist.-Palghar, Maharashtra-401506
Tel: 91.02525-663630/39/34


HO Add.: Loba Chemie Pvt. Ltd., Jehangir Villa, 107, Wodehouse Road., Colaba, Mumbai, Maharashtra – 400005
Customer Care No: +9122 66636663/Email:info@lobachemie.com www.lobachemie.com

LOBA/QC/FM/01

06/01.06.2023

Gambar 2. Sertifikat Analisis Asam Salisilat

Lampiran 3. Sertifikat Analisis Etanol 96%



Certificate of Analysis

1.59010.0000 Ethanol 96% EMSURE® Reag. Ph Eur
 Batch I1244810

	Spec. Values		Batch Values	
Assay (m/m)	92.6 - 95.2	%	93.0	%
Assay (V/V)	95.1 - 96.9	%	95.4	%
Identity (IR)	conforms		conforms	
Appearance	conforms		conforms	
Acidity or alkalinity	conforms		conforms	
Density (d 20 °C/20 °C)	0.805 - 0.812		0.811	
Boiling point	78 - 79	°C	78	°C
Absorption	conforms		conforms	
Volatile impurities (GC)	conforms		conforms	
Evaporation residue	≤ 25	mg/l	1	mg/l

Date of release (DD.MM.YYYY) 12.10.2022
 Minimum shelf life (DD.MM.YYYY) 30.09.2027

Jeannette David
 Responsible laboratory manager quality control

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

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 Frankfurter Straße 749

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

Page 1 of 1

Gambar 3. Sertifikat Analisis Pelarut Etanol 96%

Lampiran 4. Lima Sampel *Facial Wash*



Gambar 4. Lima Produk Sampel *Facial Wash*

Lampiran 5. Analisis Kualitatif Sampel dengan FeCl_3 1%

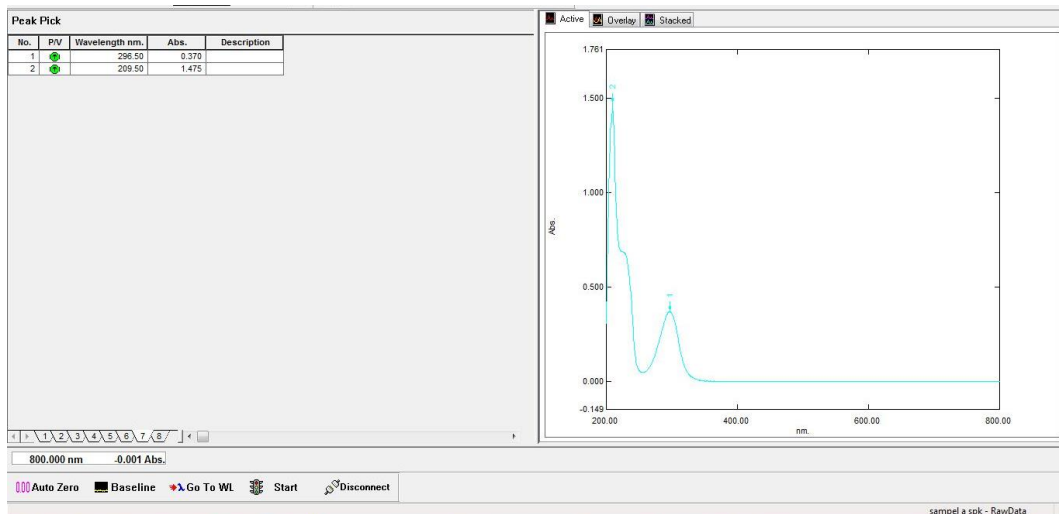


Gambar 5. Hasil Reaksi Larutan Sampel dengan Larutan FeCl_3 1% Pada Plat Tetes

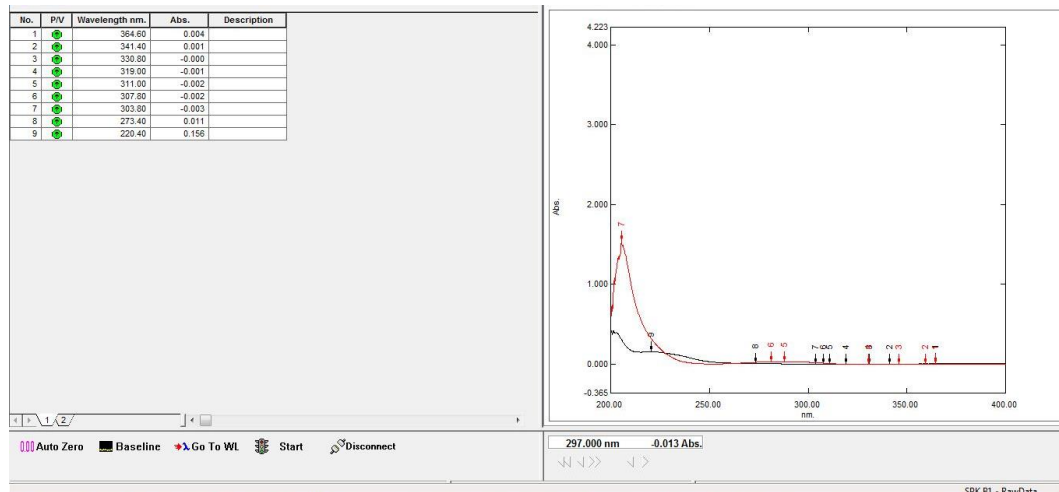


Gambar 6. Hasil Reaksi Larutan Sampel dengan Larutan FeCl_3 1% Pada Tabung Reaksi

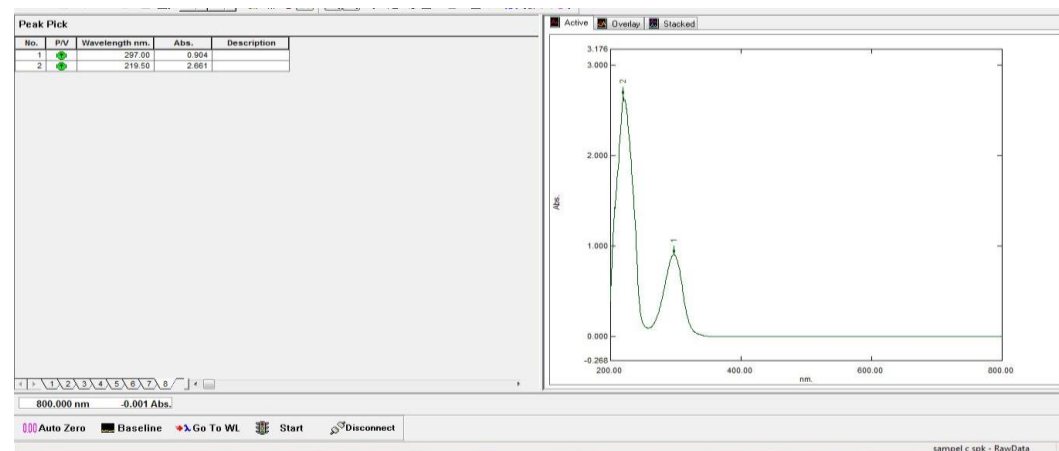
Lampiran 6. Spektrum Sampel A, B, dan C



Gambar 7. Spektrum A

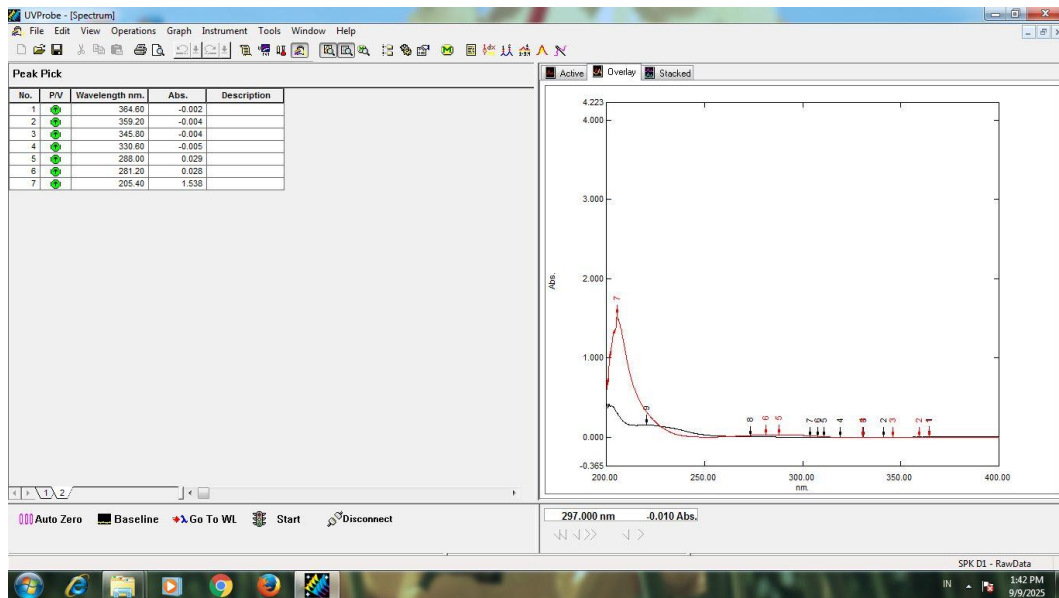


Gambar 8. Spektrum B

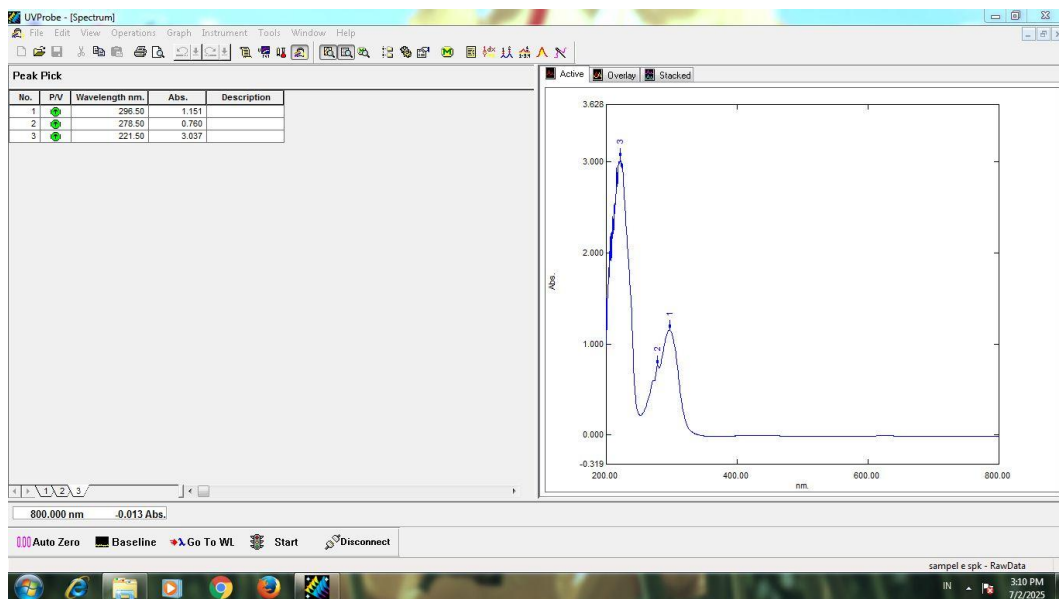


Gambar 9. Spektrum C

Lampiran 7. Spektrum Sampel D dan E

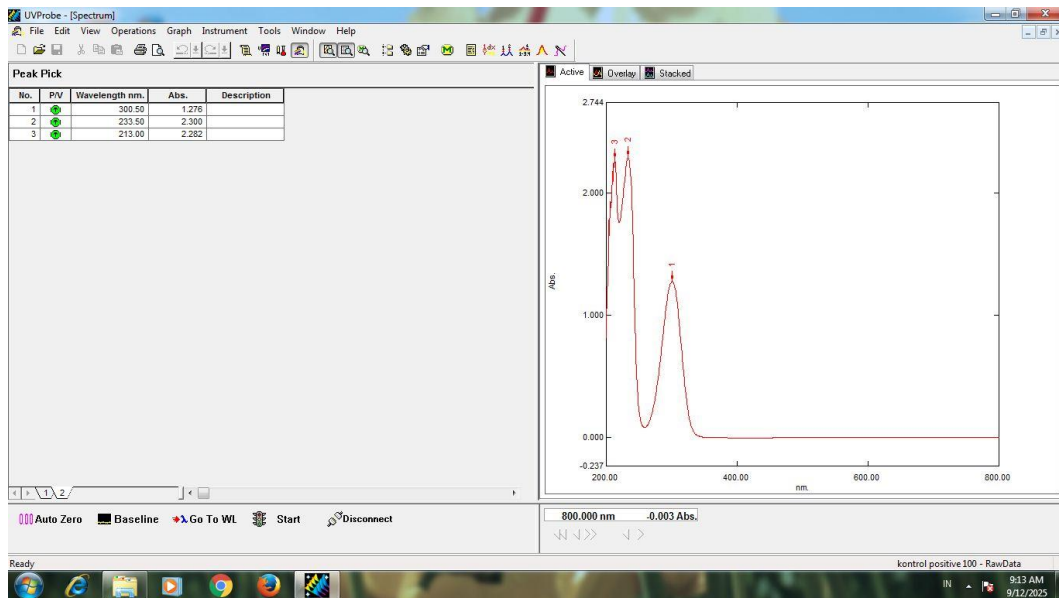


Gambar 10. Spektrum D



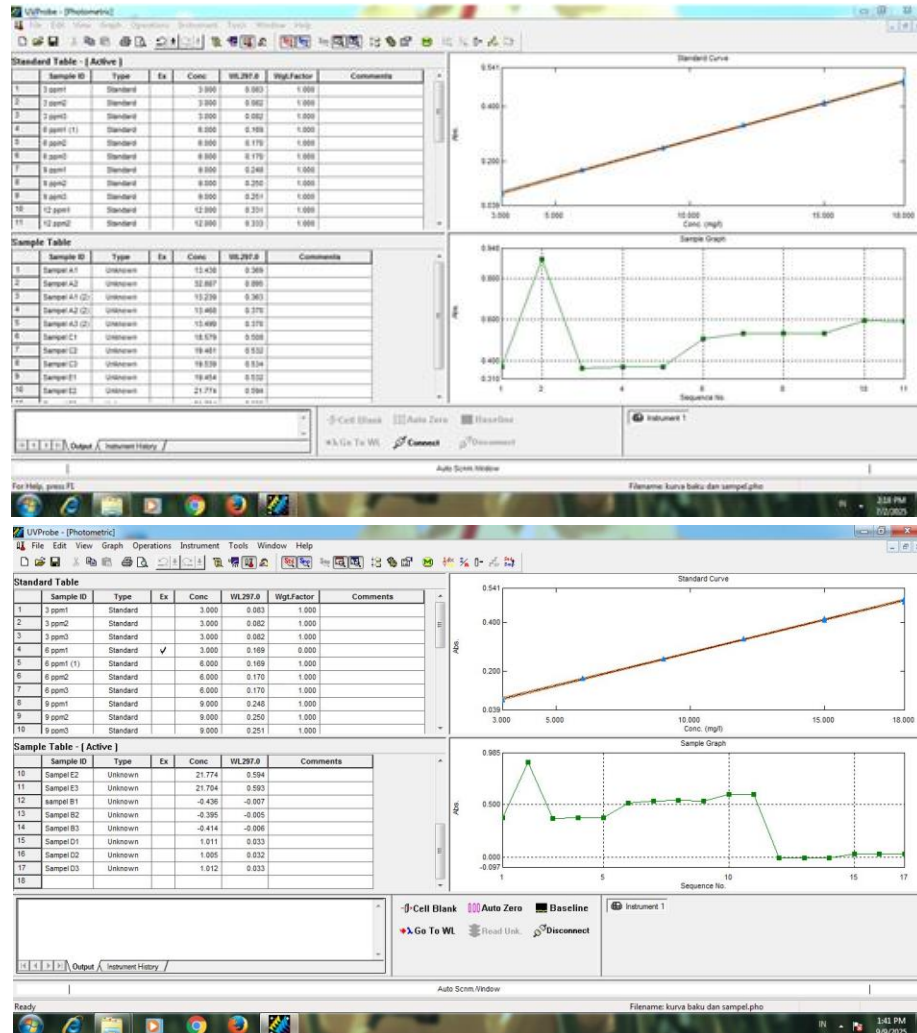
Gambar 11. Spektrum E

Lampiran 8. Kontrol Positif Asam Salisilat



Gambar 12. Spektrum Kontrol Positif

Lampiran 9. Data Absorbansi Larutan Kurva Baku & Sampel



Gambar 13. Data Absorbansi Kurva & Sampel

Lampiran 10. Perhitungan Larutan Standar Asam Salisilat 1000 Ppm

- Larutan Standar 1000 Ppm

$$1 \text{ Ppm} = 1 \text{ mg/L}$$

$$1000 \text{ Ppm} = 1000 \text{ mg/L}$$

$$1000 \text{ Ppm} = 50 \text{ mg/ } 0,05 \text{ L}$$

$$= (50 \text{ mg/ } 50 \text{ L})$$

- Larutan Standar 1000 Ppm ke 100 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{V_2 \times M_2}{M_1}$$

$$V_1 = \frac{25 \text{ mL} \times 100 \text{ Ppm}}{1000 \text{ Ppm}}$$

$$= 2,5 \text{ mL}$$

Lampiran 11. Perhitungan Konsentrasi Larutan Kurva Baku Asam Salisilat

1. Larutan 3 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 3 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 0,3 \text{ mL}$$

2. Larutan 6 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 6 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 0,6 \text{ mL}$$

3. Larutan 9 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 9 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 0,9 \text{ mL}$$

4. Larutan 12 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 12 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 1,2 \text{ mL}$$

5. Larutan 15 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 15 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 1,5 \text{ mL}$$

6. Larutan 18 Ppm

$$V_1 \times M_1 = V_2 \times M_2$$

$$V_1 = \frac{10 \text{ mL} \times 18 \text{ Ppm}}{100 \text{ Ppm}}$$

$$= 1,8 \text{ mL}$$

Lampiran 12. Perhitungan Nilai Korelasi (Linearitas)

No.	Konsentrasi Ppm (x)	Absorbansi	Rata- rata Absorbansi	X ²	Y ²	XY
1.	3 Ppm	0,083	0,082	9	0,006724	0,246
		0,082				
		0,082				
2.	6 Ppm	0,169	0,170	36	0,0289	1,02
		0,17				
		0,17				
3.	9 Ppm	0,248	0,250	81	0,0625	2,25
		0,25				
		0,251				
4.	12 Ppm	0,331	0,332	144	0,110224	3,984
		0,333				
		0,333				
5.	15 Ppm	0,409	0,413	225	0,170569	6,195
		0,414				
		0,417				
6.	18 Ppm	0,494	0,497	324	0,247009	8,946
		0,498				
		0,499				
Σ	63	1,744		819	0,625926	22,641

$$\begin{aligned}
 \text{Perhitungan : } & \frac{n \times (\sum XY) - (\sum X)(\sum Y)}{\sqrt{n(\sum X^2) - (\sum X)^2} \times \sqrt{n(\sum Y^2) - (\sum Y)^2}} \\
 &= \frac{6 \times (22,641) - 109,872}{\sqrt{(6 \times 819 - (3969))} \times \sqrt{(6 \times 0,62593) - (3,04154)}} \\
 &= \frac{25,974}{25,97592924} \\
 &= 0,99992573
 \end{aligned}$$

Lampiran 13. Perhitungan Nilai Akurasi

No.	Konsentrasi (Ppm)	Absorbansi	Konsentrasi Terukur	% Recovery	Rata-rata % Recovery
1.	12	0,331	11,98181818	99,84848485	100,25%
		0,333	12,05454545	100,4545455	
		0,333	12,05454545	100,4545455	
2.	15	0,409	14,81818182	98,78787879	99,83%
		0,414	15	100	
		0,417	15,10909091	100,7272727	
3.	18	0,409	17,90909091	99,49494949	100,10%
		0,414	18,05454545	100,3030303	
		0,417	18,09090909	100,5050505	

Persamaan Regresi Linear $(y) = 0,0275x + 0,0015$

$$\% \text{ Recovery} = \frac{\text{Konsentrasi yang Diperoleh}}{\text{Konsentrasi Sebenarnya}} \times 100\%$$

Perhitungan:

1. Konsentrasi 12 Ppm

- Replikasi I

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,331 - 0,0015}{0,0275}$$

$$= 11,98 \text{ Ppm}$$

$$\% \text{ Recovery} = \frac{11,98 \text{ Ppm}}{12 \text{ Ppm}} \times 100\%$$

$$= 99,84\%$$

- Replikasi II

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,333 - 0,0015}{0,0275}$$

$$= 12,05 \text{ Ppm}$$

$$\% \text{ Recovery} = \frac{12,05 \text{ Ppm}}{12 \text{ Ppm}} \times 100\% = 100,45\%$$

- Replikasi III

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,333 - 0,0015}{0,0275}$$

$$= 12,05 \text{ Ppm}$$

$$\begin{aligned} \% \text{ Recovery} &= \frac{12,05 \text{ Ppm}}{12 \text{ Ppm}} \times 100\% \\ &= 100,45\% \end{aligned}$$

2. Konsentrasi 15 Ppm

- Replikasi I

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,409 - 0,0015}{0,0275}$$

$$= 14,81 \text{ Ppm}$$

$$\begin{aligned} \% \text{ Recovery} &= \frac{14,81 \text{ Ppm}}{15 \text{ Ppm}} \times 100\% \\ &= 98,78\% \end{aligned}$$

- Replikasi II

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,414 - 0,0015}{0,0275}$$

$$= 15 \text{ Ppm}$$

$$\begin{aligned} \% \text{ Recovery} &= \frac{15 \text{ Ppm}}{15 \text{ Ppm}} \times 100\% \\ &= 100\% \end{aligned}$$

- Replikasi III

$$y = 0,0275x + 0,0015$$

$$x = \frac{0,417 - 0,0015}{0,0275}$$

$$= 15,10 \text{ Ppm}$$

$$\begin{aligned} \% \text{ Recovery} &= \frac{15,10 \text{ Ppm}}{15 \text{ Ppm}} \times 100\% \\ &= 100,72\% \end{aligned}$$

3. Konsentrasi 18 Ppm

• Replikasi I

$$y=0,0275x + 0,0015$$

$$x = \frac{0,494 - 0,0015}{0,0275}$$

$$= 17,90 \text{ Ppm}$$

$$\% \text{ Recovery} = \frac{17,90 \text{ Ppm}}{18 \text{ Ppm}} \times 100\%$$

$$= 99,49\%$$

• Replikasi II

$$y=0,0275x + 0,0015$$

$$x = \frac{0,498 - 0,0015}{0,0275}$$

$$= 18,05 \text{ Ppm}$$

$$\% \text{ Recovery} = \frac{18,05 \text{ Ppm}}{18} \times 100\%$$

$$= 100,30\%$$

• Replikasi III

$$y=0,0275x + 0,0015$$

$$x = \frac{0,499 - 0,0015}{0,0275}$$

$$= 18,09 \text{ Ppm}$$

$$\% \text{ Recovery} = \frac{18,09 \text{ Ppm}}{18} \times 100\%$$

$$= 100,50\%$$

Lampiran 14. Perhitungan Nilai Presisi

Konsentrasi (Ppm)	Absorbansi	Rata-rata Absorbansi	SD	%RSD
18	0,494	0,490	0,0076	1,56%
	0,498			
	0,499			
	0,484			
	0,483			
	0,483			

Perhitungan:

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

$$= 0,0076$$

$$\bullet \quad \% \text{ RSD} = \frac{SD}{\text{Rata-rata Absorbansi}} \times 100\%$$

$$\% \text{ RSD} = \frac{0,0076}{0,490} \times 100\%$$

$$= 1,56\%$$

Lampiran 15. Perhitungan Nilai LoD dan LoQ

No.	Konsentrasi	Absorbansi (Y)	Konsentrasi Terukur (Y)	(Y-Y')	(Y-Y') ²
1.	3	0,082	0,0846	-0,00226	-0,00000513
2.	6	0,170	0,1671	0,002566667	0,000006587
3.	9	0,250	0,2496	-0,0036	0,00001296
4.	12	0,322	0,3321	0,000233333	0,000000054
5.	15	0,413	0,4146	-0,00126666	0,00000160
6.	18	0,497	0,4971	-0,0001	1E-08
Jumlah					2,63544E-05
SD					0,002295842
LoD					0,25
LoQ					0,83

1. Perhitungan Nilai Y':

- Konsentrasi 3 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(3) + 0,0021$$

$$y = 0,0846$$

- Konsentrasi 6 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(6) + 0,0021$$

$$y = 0,1671$$

- Konsentrasi 9 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(9) + 0,0021$$

$$y = 0,2496$$

- Konsentrasi 12 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(12) + 0,0021$$

$$y = 0,3321$$

- Konsentrasi 15 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(15) + 0,0021$$

$$y = 0,4146$$

- Konsentrasi 18 Ppm

$$y = 0,0275x + 0,0021$$

$$y = 0,0275(18) + 0,0021$$

$$y = 0,4971$$

2. Perhitungan LoD dan LoQ

- LoD - %

$LoD = \frac{3 \times SD}{Slope}$	0,25 mg/1 L
$= \frac{3 \times 0,002295842}{0,0275}$	0,00025 g/1000 mL
$= 0,25 \text{ Ppm}$	0,000025 g/100 mL
	0,000025 %
- LoQ -%

$LoQ = \frac{10 \times SD}{0,0275}$	0,83 mg/1 L
$= \frac{10 \times 0,002295842}{0,0275}$	0,00083 g/1000 mL
$= 0,83 \text{ Ppm}$	0,000083 g/100 mL
	0,000083%

Lampiran 16. Perhitungan Kadar Asam Salisilat pada Sampel

$$\% \text{ Kadar} = x \frac{\left(\frac{\text{mg}}{\text{L}}\right) \times V(L) \times Fp}{\text{Berat Sampel}(\text{mg})} \times 100\%$$

1. Sampel A

- Replikasi I

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,363 - 0,0021}{0,0275}$$

$$x = 13,12$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{13,12 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{3717} \\ &= 1,10\% \end{aligned}$$

- Replikasi II

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,370 - 0,0021}{0,0275}$$

$$x = 13,37$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{13,37 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{3717} \\ &= 1,12\% \end{aligned}$$

- Replikasi III

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,370 - 0,0021}{0,0275}$$

$$x = 13,37$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{13,37 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{3717} \\ &= 1,12\% \end{aligned}$$

$$\text{Rata-rata} = \frac{1,1 + 1,12 + 1,12}{3} = 1,11\%$$

- $\frac{13,12 + 13,37 + 13,37}{3} = 13,29 \text{ ppm}$

$$13,29 \text{ mg /1L}$$

$$0,01329 \text{ g/ 1000 mL}$$

$$0,001329 \text{ g/ 100 mL}$$

0,001329 %

2. Sampel C

- Replikasi I

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,508 - 0,0021}{0,0275}$$

$$x = 18,39$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{18,39 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{2864} \\ &= 2,00\% \end{aligned}$$

- Replikasi II

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,532 - 0,0021}{0,0275}$$

$$x = 19,26$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{19,26 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{2864} \\ &= 2,10\% \end{aligned}$$

- Replikasi III

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,534 - 0,0021}{0,0275}$$

$$x = 19,34$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{19,34 \frac{\text{mg}}{\text{mL}} \times 0,05L \times 62,5}{2864} \\ &= 2,11\% \end{aligned}$$

$$\text{Rata-rata} = \frac{2,0 + 2,10 + 2,11}{3} = 2,0\%$$

$$\frac{18,39 + 19,26 + 19,34}{3} = 19,00 \text{ ppm}$$

19,00 mg/ 1L

0,019 g/1000 mL

0,0019 g/100 mL

0,0019 %

3. Sampel E

- Replikasi I

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,532 - 0,0021}{0,0275}$$

$$x = 19,26$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{19,26 \frac{\text{mg}}{\text{mL}} \times 0,05 \text{L} \times 62,5}{3043} \\ &= 1,9\% \end{aligned}$$

- Replikasi II

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,594 - 0,0021}{0,0275}$$

$$x = 21,52$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{21,52 \frac{\text{mg}}{\text{mL}} \times 0,05 \text{L} \times 62,5}{3043} \\ &= 2,2\% \end{aligned}$$

- Replikasi III

$$y = 0,0275x + 0,0021$$

$$x = \frac{0,593 - 0,0021}{0,0275}$$

$$x = 21,48$$

$$\begin{aligned} \% \text{ Kadar} &= \frac{21,48 \frac{\text{mg}}{\text{mL}} \times 0,05 \text{L} \times 62,5}{3043} \\ &= 2,2\% \end{aligned}$$

$$\text{Rata-rata} = \frac{1,9 + 2,2 + 2,2}{3}$$

$$= 2,1\%$$

$$\frac{19,26 + 21,52 + 21,48}{3} = 20,76 \text{ ppm}$$

$$20,76 \text{ mg/1 L}$$

$$0,02076 \text{ g/1000 mL}$$

$$0,002076 \text{ g/ 100 mL}$$

$$0,002076\%$$