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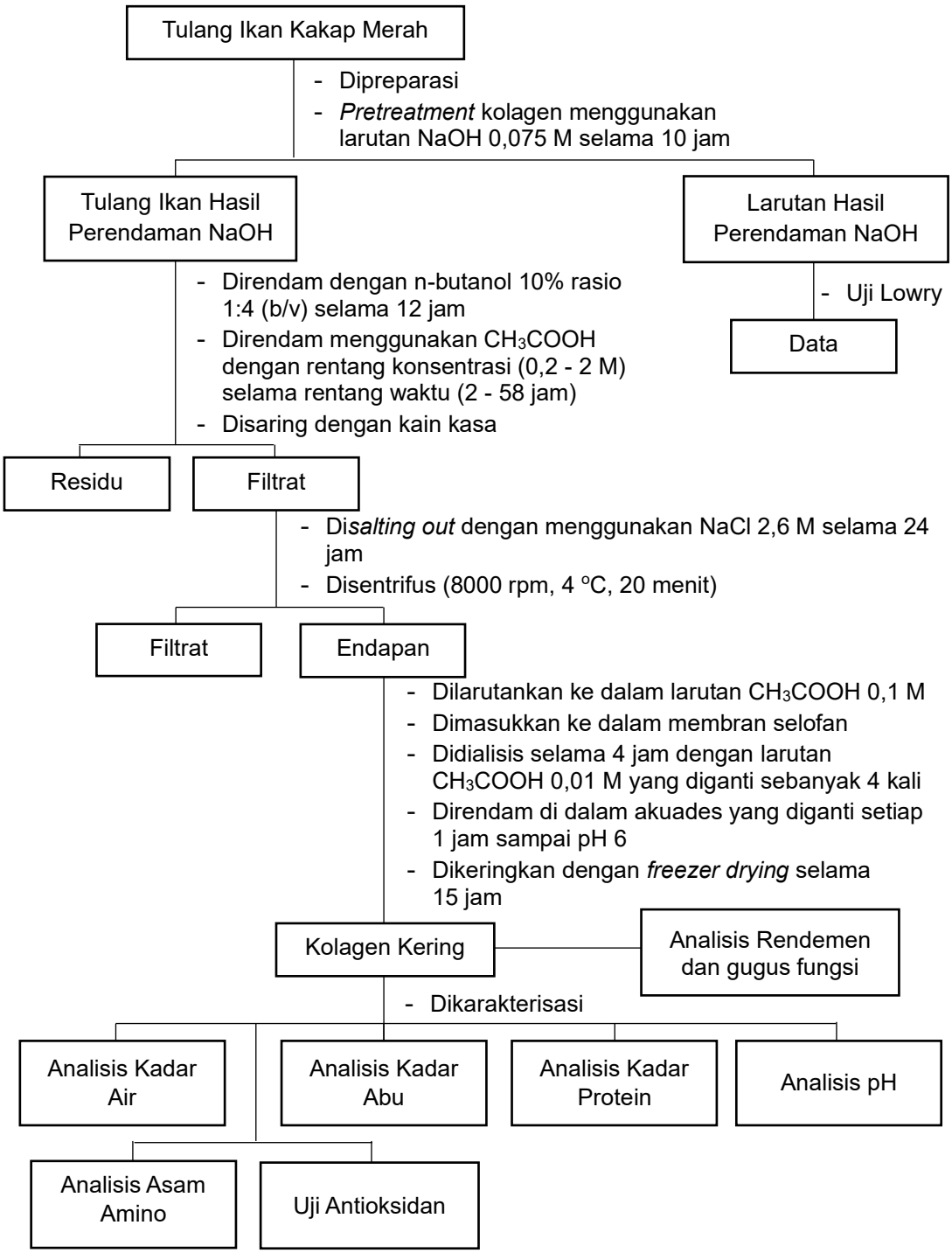
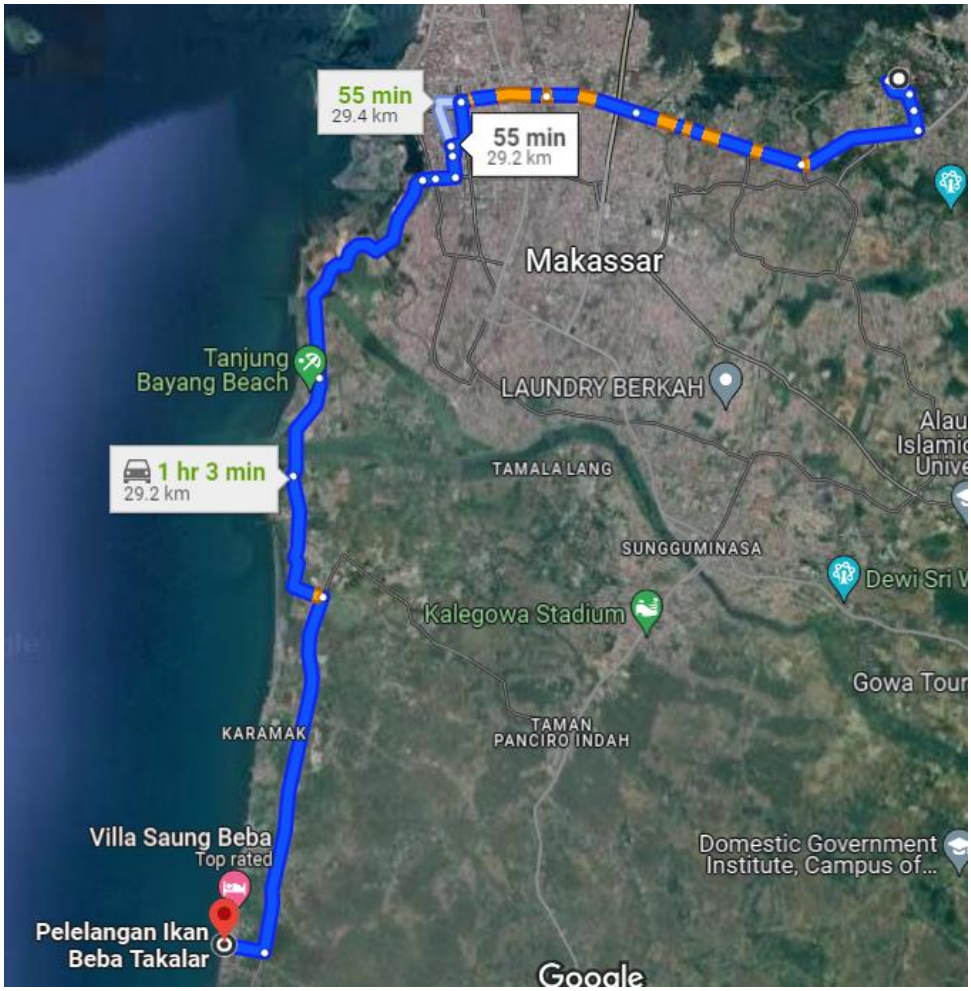
Lampiran 1. Bagan Alir Penelitian



Lampiran 2. Peta Tempat Pengambilan Sampel TIKM



Lmapiran 3. Pembuatan Larutan

1. Pembuatan Larutan NaOH 500 mL 0,075 M

g = V x M x Mr
= 0,5 L x 0,075 M x 40 g/mol
= 1,5 g

2. Pembuatan Asam Asetat

$$M = \frac{\text{massa jenis x \% x 10}}{\text{Berat Molekul}}$$

$$= \frac{1{,}05\ \text{g/cm}^3 \text{ x } 100\% \text{ x } 10}{60\ \text{g/mol}}$$

= 17,5 M

- **Konsentrasi 5 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 17{,}5\ M = 100\ mL \times 5\ M$
  $V_1 = 28{,}5\ mL$

- **Konsentrasi 0,2 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 5\ M = 100\ mL \times 0{,}2\ M$
  $V_1 = 4\ mL$

- **Konsentrasi 0,5 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 5\ M = 100\ mL \times 0{,}5\ M$
  $V_1 = 10\ mL$

- **Konsentrasi 1,3 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 5\ M = 100\ mL \times 1{,}3\ M$
  $V_1 = 26\ mL$

- **Konsentrasi 2 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 5\ M = 100\ mL \times 2\ M$
  $V_1 = 40\ mL$

- **Konsentrasi 2,3 M**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 5\ M = 100\ mL \times 2{,}3\ M$
  $V_1 = 46\ mL$

3. Pembuatan Larutan Lowry A dan Lowry B

- **Lowry A**
  5 mL folin ciocalteu : 5 mL akuades (1:1)
- **Lowry B**
  Pembuatan 50 mL NaOH 0,1 N
  g = N x V x BE
  = 0,1 N x 0,05 mL x 40 g/mol
  = 0,2 g

4. Pembuatan Larutan n-butanol 10%

$V_1 \times C_1 = V_2 \times C_2$
$V_1 \times 99{,}5\% = 100\ mL \times 10\%$
$V_1 = \frac{100\ mL \times 10\%}{99{,}5\%}$
$V_1 = 10{,}05\ mL$

5. Pembuatan Deret Larutan Standar BSA

- **Konsentrasi 0,01 mg/mL**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1\ mg/mL = 2\ mL \times 0{,}01\ mg/mL$
  $V_1 = 0{,}02\ mL$
  Volume akuades = 2 mL-0,02 mL = 1,98 mL

- **Konsentrasi 0,02 mg/mL**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1\ mg/mL = 2\ mL \times 0{,}02\ mg/mL$
  $V_1 = 0{,}04\ mL$
  Volume akuades = 2 mL-0,04 mL = 1,96 mL

- **Konsentrasi 0,04 mg/mL**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1\ mg/mL = 2\ mL \times 0{,}04\ mg/mL$
  $V_1 = 0{,}08\ mL$
  Volume akuades = 2 mL-0,08 mL = 1,92 mL

- **Konsentrasi 0,08 mg/mL**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1\ mg/mL = 2\ mL \times 0{,}08\ mg/mL$
  $V_1 = 0{,}16\ mL$
  Volume akuades = 2 mL-0,16 mL = 1,84 mL

- **Konsentrasi 0,16 mg/mL**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1$ mg/mL $= 2$ mL $\times$ 0,16 mg/mL
  $V_1 = 0{,}32$ mL
  Volume akuades = 2 mL-0,32 mL = 1,68 mL

6. Pembuatan Larutan Induk untuk Uji Aktivitas Antioksidan

- **Pembuatan Larutan DPPH 0,4 mM**
  $g = M \cdot V \cdot Mr$
  $= 0{,}4 \times 10^{-3}$ M . 0,1 . 394,32
  $= 15{,}7728 \times 10^{-3}$ g
  = 0,015 g

- **Pembuatan Larutan Induk Asam Askorbat 500 mg/L**
  $\text{mg/L} = \frac{\text{mg}}{\text{L}}$
  500 = mg/0,01 L
  mg = 5 mg = 0,005 g
  diencerkan hingga 10 mg/L:
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 500$ mg/L = 10 mL $\times$ 10 mg/L
  $V_1 = 0{,}2$ mL
  Volume metanol p.a yang dibutuhkan = 10 mL - 0,2 mL = 9,8 mL

- **Pembuatan Larutan Induk Kolagen 1000 mg/L**
  $\text{mg/L} = \frac{\text{mg}}{\text{L}}$
  $\text{mg/L} = \frac{\text{mg}}{0{,}01\ \text{L}}$
  mg = 10 mg = 0,01 g

7. Pembuatan Deret Standar Asam Askorbat

- **Konsentrasi 0,5 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 10$ mg/L $= 5$ mL $\times$ 0,5 mg/L
  $V_1 = 0{,}25$ mL

- **Konsentrasi 1 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 10$ mg/L $= 5$ mL $\times$ 1 mg/L
  $V_1 = 0{,}5$ mL

- **Konsentrasi 2 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 10$ mg/L $= 5$ mL $\times 2$ mg/L
  $V_1 = 1$ mL

- **Konsentrasi 4 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 10$ mg/L $= 5$ mL $\times 4$ mg/L
  $V_1 = 2$ mL

- **Konsentrasi 8 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 50$ mg/L $= 5$ mL $\times 8$ mg/L
  $V_1 = 4$ mL

8. Pembuatan Deret Standar Kolagen

- **Konsentrasi 30 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1000$ mg/L $= 5$ mL $\times 30$ mg/L
  $V_1 = 0{,}15$ mL

- **Konsentrasi 120 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1000$ mg/L $= 5$ mL $\times 120$ mg/L
  $V_1 = 0{,}6$ mL

- **Konsentrasi 240 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1000$ mg/L $= 5$ mL $\times 240$ mg/L
  $V_1 = 1{,}2$ mL

- **Konsentrasi 420 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1000$ mg/L $= 5$ mL $\times 420$ mg/L
  $V_1 = 2{,}1$ mL

- **Konsentrasi 600 mg/L**
  $V_1 \times M_1 = V_2 \times M_2$
  $V_1 \times 1000$ mg/L $= 5$ mL $\times 600$ mg/L
  $V_1 = 3$ mL

Lampiran 4. Perhitungan Optimasi Rendemen Kolagen TIKM

Run Order	Konsentrasi Asam Asetat (M)	Waktu Perendaman (Jam)	Rendemen Kolagen (%)
1	1,3	25	0,244
2	1,3	8	0,174
3	1,3	25	0,239
4	0,2	25	0,554
5	1,3	25	0,219
6	2,0	48	0,036
7	1,3	25	0,468
8	2,3	25	0,042
9	1,3	25	0,314
10	2,0	2	0,039
11	0,5	48	0,523
12	1,3	58	0,408
13	0,5	2	0,210

Rendemen Kolagen

1. TIKM 1

$$\text{Rendemen kolagen (\%)} = \frac{\text{Berat kering kolagen (g)}}{\text{Berat awal tulang (g)}} \times 100\%$$

$$= \frac{0{,}0122\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}244\%$$

2. TIKM 2

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0087\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}174\%$$

3. TIKM 3

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0120\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}239\%$$

4. TIKM 4

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0277\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}554\%$$

5. TIKM 5

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0110\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}219\%$$

6. TIKM 6

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0018\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}036\%$$

7. TIKM 7

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0234\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}468\%$$

8. TIKM 8

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0021\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}042\%$$

9. TIKM 9

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0157\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}314\%$$

10. TIKM 10

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0020\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$

$$= 0{,}039\%$$

11. TIKM 11

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0261\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$
$$= 0{,}532\%$$

12. TIKM 12

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0204\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$
$$= 0{,}408\%$$

13. TIKM 13

$$\text{Rendemen kolagen (\%)} = \frac{0{,}0105\ \text{g}}{5{,}00\ \text{g}} \times 100\%$$
$$= 0{,}210\%$$

Lampiran 5. Perhitungan Validasi Kondisi Optimum TIKM

No	Konsentrasi Asam Asetat (M)	Waktu Perendaman (Jam)	Berat Awal (g)	Berat Akhir (g)	Rendemen Kolagen (%)
1	0,19	58	100	0,3954	0,3954
2	0,19	58	100	0,3486	0,3486
3	0,19	58	100	0,3403	0,3403
4	0,19	58	100	0,4716	0,4716
5	0,19	58	100	0,4489	0,4489
Rata-Rata					0,40096

Rendemen Validasi

1. TIKM 1

$$\text{Rendemen kolagen (\%)} = \frac{\text{Berat kering kolagen (g)}}{\text{Berat awal tulang (g)}} \times 100\%$$

$$= \frac{0{,}3954\ \text{g}}{100\ \text{g}} \times 100\%$$

$$= 0{,}3954\%$$

2. TIKM 2

$$\text{Rendemen kolagen (\%)} = \frac{0{,}3486\ \text{g}}{100\ \text{g}} \times 100\%$$

$$= 0{,}3486\%$$

3. TIKM 3

$$\text{Rendemen kolagen (\%)} = \frac{0{,}3403\ \text{g}}{100\ \text{g}} \times 100\%$$

$$= 0{,}3403\%$$

4. TIKM 4

$$\text{Rendemen kolagen (\%)} = \frac{0{,}4716\ \text{g}}{100\ \text{g}} \times 100\%$$

$$= 0{,}4716\%$$

5. TIKM 5

$$\text{Rendemen kolagen (\%)} = \frac{0{,}4489\ \text{g}}{100\ \text{g}} \times 100\%$$

$$= 0{,}4489\%$$

Lampiran 6. Perhitungan Kadar Air

No.	Bobot Kosong Cawan (g) A	Bobot Cawan + Sampel (g) B	Bobot Konstan (g) C	Bobot Sampel (g) D	Kadar Air (%)
1	58,227	58,3605	58,3471	0,1335	10,04%

$$\text{Kadar air (\%)} = \frac{B - C}{B - A} \times 100\%$$

$$\text{Kadar air (\%)} = \frac{58,3605 - 58,4371}{58,3605 - 58,227} \times 100\%$$
$$= 10,04\%$$

Lampiran 7. Perhitungan Kadar Abu

No.	Bobot Kosong Cawan (g) A	Bobot Cawan + Sampel (g) B	Bobot Konstan (g) C	Bobot Sampel (g) D	Kadar Abu (%)
1	56,4344	56,5854	56,4365	0,151	1,39

$$\text{Kadar Abu (\%)} = \frac{C - A}{B - A} \times 100\%$$

$$\text{Kadar Abu (\%)} = \frac{56{,}4365 - 56{,}4344}{56{,}5854 - 56{,}4344} \times 100\%$$
$$= 1{,}39\%$$

Lampiran 8. Perhitungan Kadar Protein

No.	Volume H_2SO_4	Normalitas H_2SO_4	Berat sampel (g)	Faktor Pengenceran	Kadar protein (%)
1	1,05	0,0105	0,1019	50	47,36

$$\text{N total (\%)} = \frac{(V_1 - V_2) \times N \times 14{,}007 \times FP}{W \times 1000} \times 100\%$$

Contoh perhitungan

$$\text{N total (\%)} = \frac{1{,}05 \times 0{,}0105 \times 14{,}007 \times 50}{0{,}1019 \times 1000} \times 100\%$$

$$= 7{,}58\%$$

$$\text{Protein} = \text{N total (\%)} \times \text{Faktor koreksi}$$

$$= 7{,}5774\% \times 6{,}25$$

$$= 47{,}36\%$$

Lampiran 9. Perhitungan Rendemen Produksi Kolagen TIKM

$$\text{Rendemen kolagen (\%)} = \frac{\text{Berat kering kolagen (g)}}{\text{Berat awal tulang (g)}} \times 100\%$$

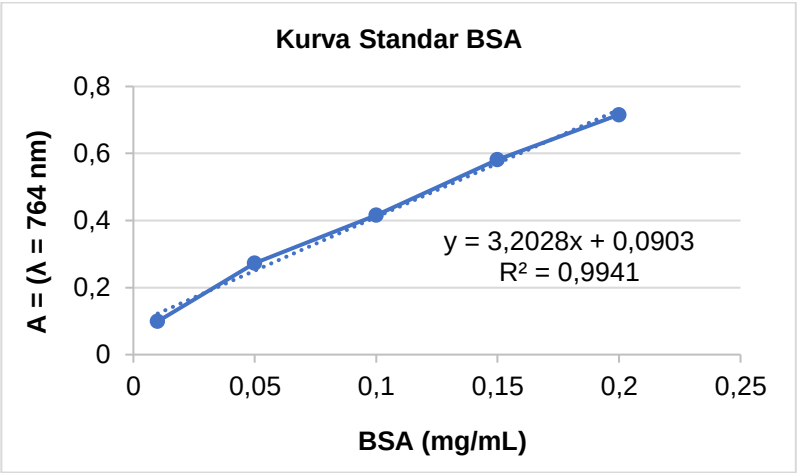
$$= \frac{2{,}0048\ \text{(g)}}{500\ \text{(g)}} \times 100\%$$

$$= 0{,}40096\%$$

Lampiran 10. Data Uji Lowry Larutan NaOH Hasil Perendaman

1. Absorbansi Larutan Standar BSA

BSA (mg/mL)	Absorbansi
0,01	0,099
0,05	0,273
0,1	0,416
0,15	0,581
0,2	0,716



2. Contoh Perhitungan Kadar Protein Terlarut

$$\text{Kadar Protein} = \frac{y - 0{,}0903}{3{,}2028} \times FP$$

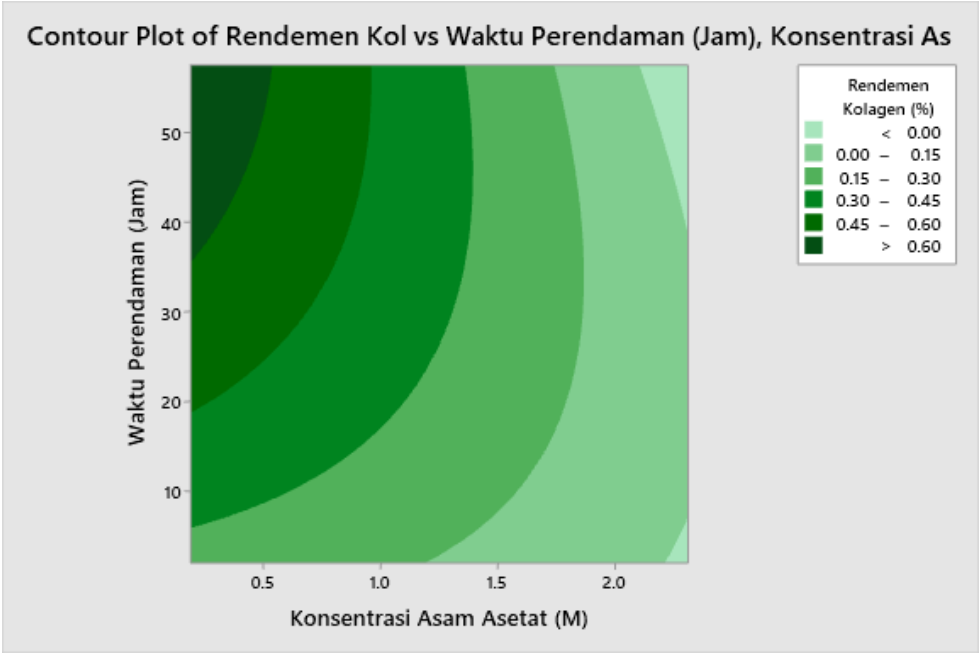
$$\text{Kadar Protein} = \frac{0{,}517 - 0{,}0903}{3{,}2028} \times 10$$

$$= 1{,}33 \text{ mg/mL}$$

3. Konsentrasi Protein dalam Larutan NaOH Sisa Perendaman TIKM

Sampel	A (λ = 764)	[Protein] (mg/mL)
0,075 M	0,517	1,33

Lampiran 11. Plot Kontur Optimasi Produksi Kolagen TIKM



Gambar 4. Plot Kontur Optimasi Produksi Kolagen TIKM

Lampiran 12. Perhitungan Kadar Asam Amino Kolagen TIKM

$$\text{Kadar Asam Amino} = \frac{\text{A/B x } C_{std}/10^9 \text{ x BM x Va x FP x 1000}}{W_x}$$

$$\text{Kadar Asam Amino (\%)} = \frac{\text{Kadar asam amino (mg/Kg)}}{10000}$$

Contoh Perhitungan:

$$\text{Kadar Asam Amino} = \frac{11{,}84/15{,}60 \text{ x } C_{std}/10^9 \text{ x } 1985{,}25 \text{ x } 1000 \text{ x } 100 \text{ x } 1000}{0{,}1020}$$

$$= 147720{,}97 \text{ mg/Kg}$$

$$\text{Kadar Asam Amino (\%)} = \frac{147720{,}97}{10000} = 14{,}77\%$$

Keterangan:

A : Rasio sampel
B : Rasio standar
C_{Std} : Konsentrasi larutan standar (pmol/µL)
BM : Bobot molekul asam amino (g/mmol)
V_a : Volume akhir sampel (µL)
Fp : Faktor pengenceran
W_x : Bobot penimbangan sampel (g)

No.: 18-5-17.1/F-MU
Revisi 5

SIG

REKAMAN PENGUJIAN UPLC

Parameter Uji	: Asam Amino
Tanggal Pengujian	: 06.12.23
Tanggal Pelaporan	: 11.12.23
Metode Acuan	: IK No.18-5-17/MU/SMM-SIG
No. Instrumen	: SIG/FNA/ALB/IN-0092
Standar Pembanding	: **Amino Acid Standard (SIGMA-ALDRICH, AAS18-10X1ML, Lot# SLCJ 4452)**
Tanggal Pembukaan Standar Induk	: 10.11.23
Tanggal Pembuatan Standar Injeksi	: 06.12.23
No. Sampel	: 312.R.21 -2
Matriks	: Kolagen

Paraf
Supervisor
11/12/2023
Eka R.

Bobot atau Volume Porsi Uji	Volume 1	Volume Pemipetan	Volume Akhir
(g; mL)	(µL)	(µL)	(µL)
0.1020	50000	500	1000

UKS	% RSD RT	% RSD Area	*Tailing Factor*	*Theoretical Plate*	Resolusi
Kriteria Keberterimaan	≤ 2	≤ 2	≤ 2	≥ 1000	≥ 1.5
AABA	0.24	0.70	0.00	1384363.13	91.24
Keterangan	OK	OK	OK	OK	OK
L-Histidine	0.72	0.33	1.01	38247.00	9.02
Keterangan	OK	OK	OK	OK	OK
L-Alanine	0.49	0.49	0.88	344409.71	51.99
Keterangan	OK	OK	OK	OK	OK
L-Phenylalanine	0.05	0.57	1.04	3406076.18	62.40
Keterangan	OK	OK	OK	OK	OK

Analit	C. Standar Induk	C. Standar Injeksi	BM	RT	Area	Rasio Standar	RT	Area	Rasio Sampel	Verifikasi Rasio	C. Injeksi	Kadar Asam Amino		Keterangan
	(pmol/µL)	(pmol/µL)	(g/mol)	(menit)	Standar	(terhadap AABA)	(menit)	Sampel	(terhadap AABA)		(pmol/µL)	(mg/Kg ; mg/L)	(%)	
AMQ				2.77	7520688.98		2.66	7520306.99						
NH3				3.83	72463.11		3.65	79242.66						
L-Histidine	2500	100	155.16	4.76	68715.40	0.98	4.56	4857.03	0.07	OK	7.04	1071.34	0.11	-
L-Serine	2500	100	105.09	6.20	69173.91	0.99	6.08	32993.29	0.47	OK	47.52	4896.41	0.49	-
L-Arginine	2500	100	174.29	6.42	73203.86	1.05	6.32	50519.84	0.72	OK	68.76	11749.87	1.17	-
Glycine	2500	100	75.07	6.64	67648.17	0.97	6.53	279647.72	3.99	OK	411.90	30314.77	3.03	-
L-Aspartic Acid	2500	100	133.10	7.23	68423.85	0.98	7.16	45380.14	0.65	OK	66.08	8623.21	0.86	-
L-Glutamic Acid	2500	100	147.13	7.81	66802.68	0.96	7.78	69382.73	0.99	OK	103.49	14927.65	1.49	-
L-Treonine	2500	100	119.12	8.28	70039.59	1.00	8.27	24419.69	0.35	OK	34.74	4057.08	0.41	-
L-Alanine	2500	100	89.10	8.90	77108.95	1.10	8.90	116822.24	1.67	OK	150.96	13186.55	1.32	-
L-Proline	2500	100	115.13	9.56	64927.30	0.93	9.56	89253.53	1.27	OK	136.97	15460.35	1.55	-
AABA				10.14	69843.76		10.10	70096.25						
Derivated Peak				10.19	285490.72		10.15	259750.83						
L-Lysine	2500	100	146.19	10.37	114516.73	1.64	10.31	37411.58	0.53	OK	32.55	4665.38	0.47	-
L-Tyrosine	2500	100	181.19	10.64	71262.94	1.02	10.55	5243.91	0.07	OK	7.33	1302.44	0.13	-
L-Valine	2500	100	117.15	10.86	69824.12	1.00	10.75	18111.51	0.26	OK	25.85	2968.41	0.30	-
L-Isoleucine	2500	100	131.17	11.61	69938.88	1.00	11.37	10343.58	0.15	OK	14.74	1895.04	0.19	-
L-Leucine	2500	100	131.17	11.72	68873.52	0.99	11.46	31561.52	0.45	OK	45.66	5871.82	0.59	-
L-Phenylalanine	2500	100	165.19	11.88	69411.77	0.99	11.62	14227.59	0.20	OK	20.42	3307.61	0.33	-
TOTAL	41250				9165360.85			8759572.63			1174.02	124297.94	12.43	

Perhitungan:
C. Standar Injeksi (pmol/µL) = V. Standar Induk (µL) x C. Standar Induk (pmol/µL) / V. Akhir Standar (µL)
Rasio Standar atau Sampel = Area Analit / Area AABA
C. Injeksi Sampel (pmol/µL) = (Rasio Sampel/Rasio Standar) x C. Standar Injeksi (pmol/µL)
FP = Volume 1 / Volume Pemipetan
Kadar Asam Amino (mg/Kg ; mg/L) = ((Rasio Sampel / Rasio Standar) x (C. Standar Injeksi/1000000) x BM x FP x Volume Akhir) / Bobot Porsi Uji (g) atau Volume Sampel (mL)
Kadar Asam Amino (%) = Kadar Asam Amino (mg/Kg ; mg/L) / 10000
Kadar Asam Amino Total = Jumlah dari semua analit asam amino

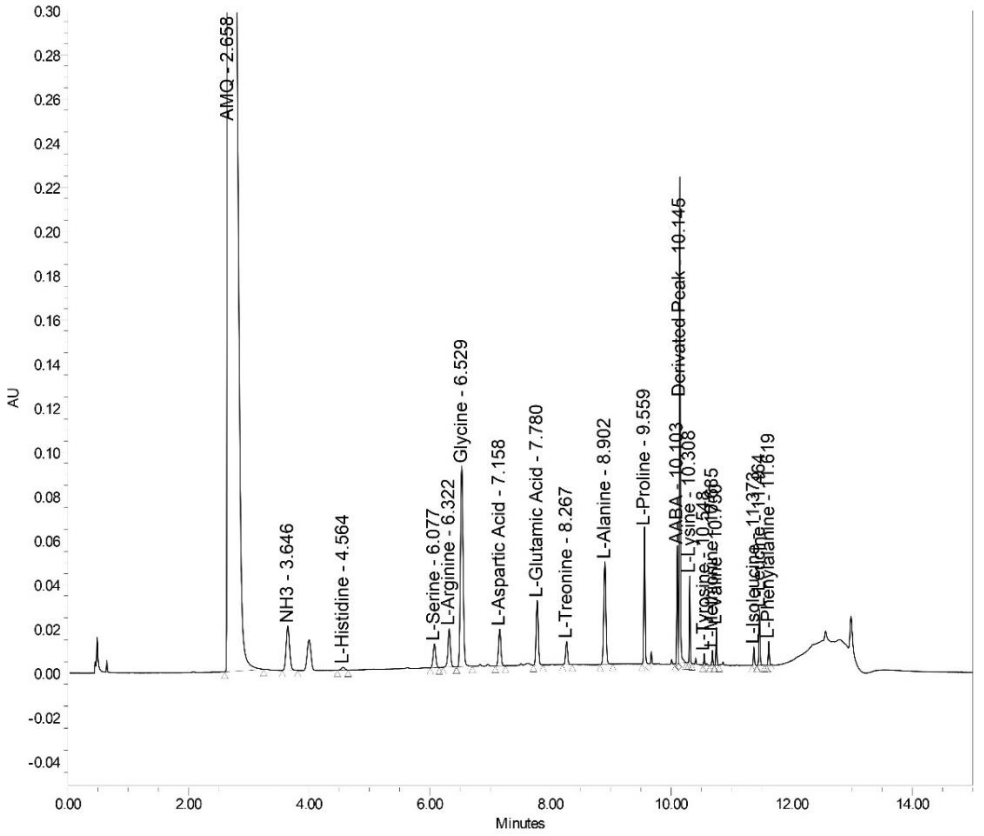
Lampiran 14. Kromatogram Analisis Asam Amino Kolagen TIKM

Empower 3 SOFTWARE

Default Individual Report SIG2

SAMPLE INFORMATION

Sample Name:	312.R.21-2	Acquired By:	Cintya
Sample Type:	Unknown	Sample Set Name	As amino 231206_Micowave
Injection #:	1	Acq. Method Set:	Asam Amino 2
Injection Volume:	1.00 ul	Processing Methoc	As amino 231207
Run Time:	15.0 Minutes	Channel Name:	PDA Ch1 260nm@4.8nm
Date Processed:	12/11/2023 9:09:09 AM WIT	Proc. Chnl. Descr.:	PDA Ch1 260nm@4.8nm



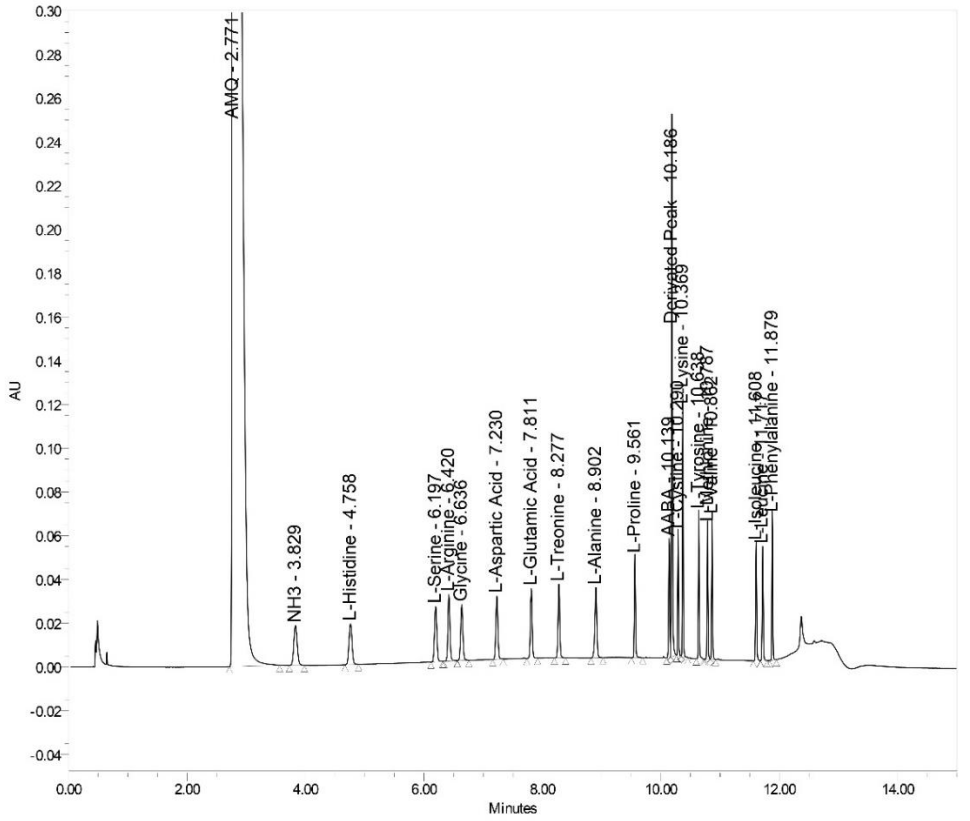
Lampiran 15. Kromatogram Analisis Standar Asam Amino

Empower™ 3 SOFTWARE

Default Individual Report SIG2

SAMPLE INFORMATION

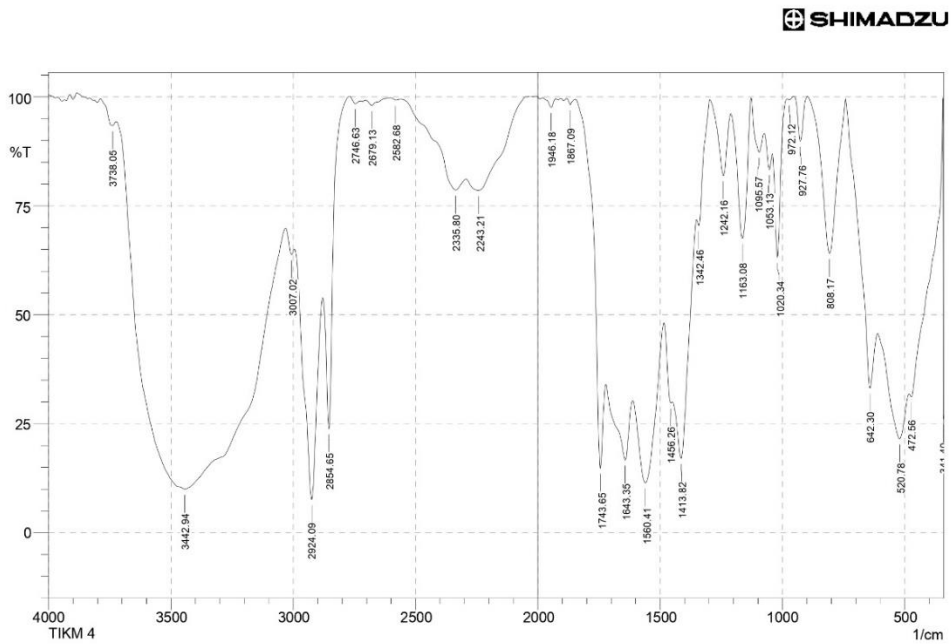
Sample Name:	Std Asam Amino 100 pmol	Acquired By:	Cintya
Sample Type:	Standard	Sample Set Name	As amino 231206
Injection #:	1	Acq. Method Set:	Asam Amino 2
Injection Volume:	1.00 ul	Processing Methoc	As amino 231207
Run Time:	15.0 Minutes	Channel Name:	PDA Ch1 260nm@4.8nm
Date Processed:	12/7/2023 8:05:18 AM WIT	Proc. Chnl. Descr.:	PDA Ch1 260nm@4.8nm



Reported by User: Cintya Anggreawati (Cintya)
Report Method: Default Individual Report SIG2
Report Method ID: 1366
Page: 1 of 2

Project Name: 2023 12 Desember\Asam Amino
Date Printed:
12/7/2023
9:19:42 AM Asia/Jakarta
Instrument Name: SIG/FNA/ALB/IN-0092

Lampiran 16. Spektrum Infra Merah Kolagen TIKM



No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	341.4	26.091	37.258	343.33	339.47	2.221	0.576
2	472.56	31.199	5.133	482.2	345.26	38.98	4.012
3	520.78	21.574	14.293	609.51	484.13	65.199	12.539
4	642.3	33.19	25.224	740.67	611.43	30.482	7.91
5	808.17	64.111	35.621	896.9	742.59	12.305	12.156
6	927.76	89.827	10.362	950.91	898.83	1.021	1.064
7	972.12	99.33	0.365	979.84	950.91	0.039	0.02
8	1020.34	63.182	27.753	1039.63	981.77	5.043	3.27
9	1053.13	83.317	5.247	1074.35	1041.56	2.059	0.415
10	1095.57	87.342	7.263	1126.43	1076.28	2.202	1.151
11	1163.08	67.535	30.618	1209.37	1128.36	7.231	6.49
12	1242.16	81.953	15.346	1296.16	1211.3	3.579	2.716
13	1342.46	70.492	5.413	1350.17	1298.09	3.99	0.471
14	1413.82	17.103	28.443	1450.47	1352.1	47.212	14.799
15	1456.26	29.784	3.226	1485.19	1450.47	15.182	0.593
16	1560.41	11.435	26.179	1612.49	1485.19	83.378	30.381
17	1643.35	16.708	14.512	1720.5	1614.42	65.96	13.42
18	1743.65	14.828	30.611	1843.95	1722.43	30.198	8.323
19	1867.09	98.197	1.359	1882.52	1843.95	0.16	0.083
20	1946.18	97.597	2.061	1980.89	1926.89	0.27	0.197
21	2243.21	78.544	6.21	2293.36	2031.04	15.327	3.965
22	2335.8	78.608	5.314	2559.54	2295.29	13.601	1.698
23	2582.68	99.215	0.422	2603.9	2561.47	0.097	0.03
24	2679.13	98.05	1.322	2704.2	2603.9	0.429	0.217
25	2746.63	98.468	1.103	2771.71	2723.49	0.194	0.109
26	2854.65	23.882	39.91	2877.79	2771.71	18.809	7.958
27	2924.09	7.657	50.56	2993.52	2879.72	60.202	34.2
28	3007.02	63.784	2.878	3030.17	2995.45	6.309	0.337
29	3442.94	10	74.387	3722.61	3032.1	409.103	346.376
30	3738.05	93.397	2.021	3786.27	3724.54	1.146	0.275

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TIKM 4

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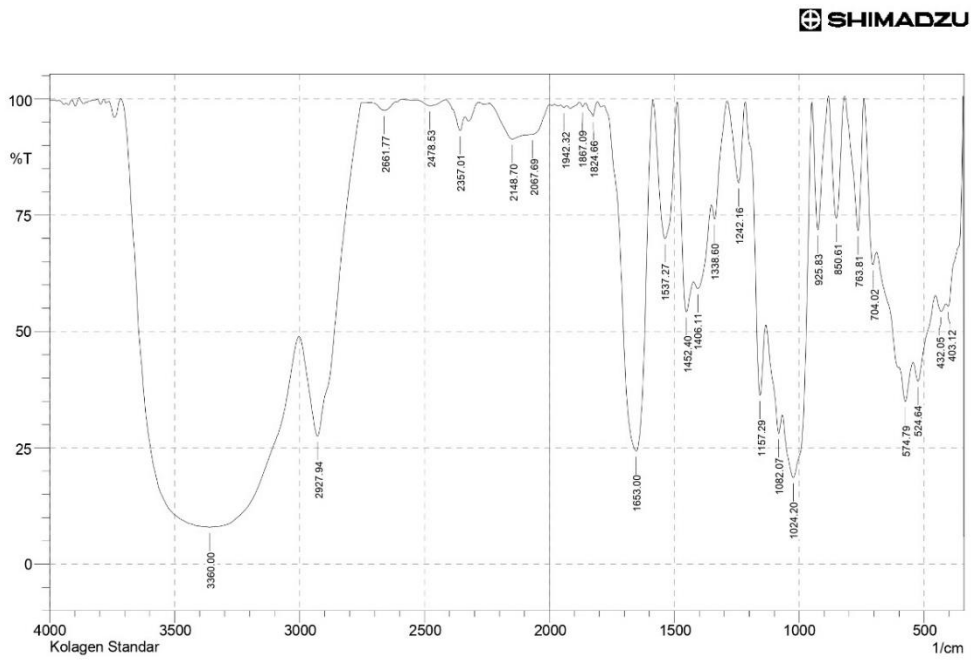
Apodization;

Lampiran 17. Spektrum Infra Merah Standar Kolagen



No.	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area
1	403.12	55.426	6.1334	412.77	345.26	12.5281	3.5154
2	432.05	54.3058	2.4322	453.27	414.7	9.9045	0.4211
3	524.64	39.2867	7.1736	543.93	455.2	29.165	2.601
4	574.79	34.9297	13.1016	690.52	545.85	46.2806	7.2385
5	704.02	64.3641	10.5094	740.67	692.44	5.8487	1.5266
6	763.81	71.6664	28.5271	817.82	742.59	5.0259	5.1249
7	850.61	74.3635	26.0507	881.47	819.75	4.1761	4.2873
8	925.83	71.8487	27.8622	948.98	883.4	4.4369	4.4144
9	1024.2	18.6132	37.8681	1066.64	950.91	59.9828	31.4913
10	1082.07	28.0766	8.0524	1132.21	1068.56	27.6953	2.5615
11	1157.29	36.3209	28.7791	1215.15	1134.14	17.3091	5.8211
12	1242.16	81.9797	17.4322	1288.45	1217.08	3.1012	2.9265
13	1338.6	74.1907	7.2236	1350.17	1290.38	4.1307	0.8156
14	1406.11	59.2182	5.1078	1421.54	1352.1	13.1963	1.8575
15	1452.4	54.1811	23.9902	1487.12	1423.47	12.0777	4.8553
16	1537.27	70.0131	29.5429	1585.49	1489.05	8.7113	8.5229
17	1653	24.3273	75.0839	1782.23	1587.42	53.5187	52.8305
18	1824.66	96.2158	3.0584	1855.52	1807.3	0.4581	0.2972
19	1867.09	98.2936	0.8847	1880.6	1855.52	0.1311	0.042
20	1942.32	98.1431	0.431	1955.82	1930.74	0.1779	0.022
21	2067.69	92.359	0.1802	2069.62	2000.18	1.5716	0.2218
22	2148.7	91.3636	3.3734	2237.43	2096.62	3.9178	1.1091
23	2357.01	93.1638	3.8213	2412.95	2339.65	1.166	0.4885
24	2478.53	98.5184	1.2382	2528.68	2414.88	0.4528	0.3355
25	2661.77	97.5266	1.7714	2715.77	2613.55	0.7088	0.3939
26	2927.94	27.5093	36.3278	3001.24	2754.35	72.9947	34.5093
27	3360	7.9526	1.7731	3375.43	3003.17	297.1995	36.4779

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Kolagen Standar

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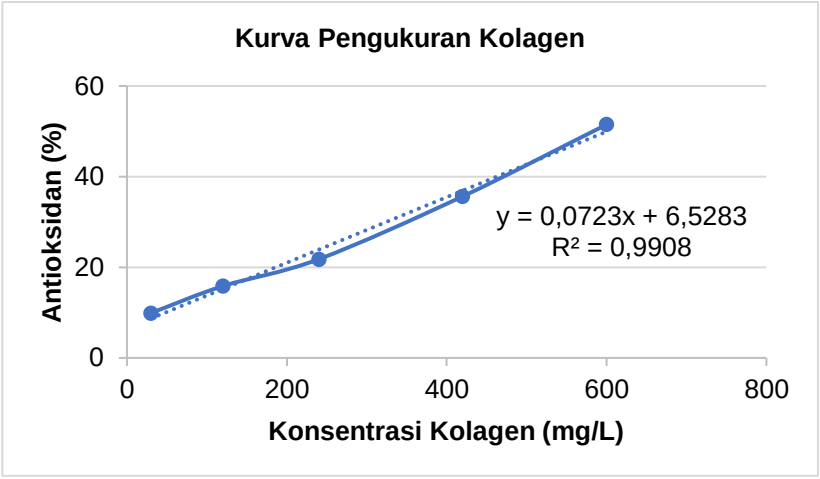
Lampiran 18. Data Aktivitas Antioksidan

a. Pengukuran Aktivitas Antioksidan Kolagen

No.	Konsentrasi (mg/L)	Aktivitas Antioksidan (%)	Nilai IC_{50}
1	30	9,90	601,27
2	120	15,84	
3	240	21,78	
4	420	35,64	
5	600	51,49	



Konsentrasi 30 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(Ab - As)}{Ab} \times 100\%$$

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}091)}{0{,}101} \times 100\%$$

$$= 9{,}90\%$$

Konsentrasi 120 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}085)}{0{,}101} \times 100\%$$

$$= 15{,}84\%$$

Konsentrasi 240 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}079)}{0{,}101} \times 100\%$$

$$= 21{,}78\%$$

Konsentrasi 420 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}065)}{0{,}101} \times 100\%$$
$$= 35{,}64\%$$

Konsentrasi 600 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}049)}{0{,}707} \times 100\%$$
$$= 51{,}49\%$$

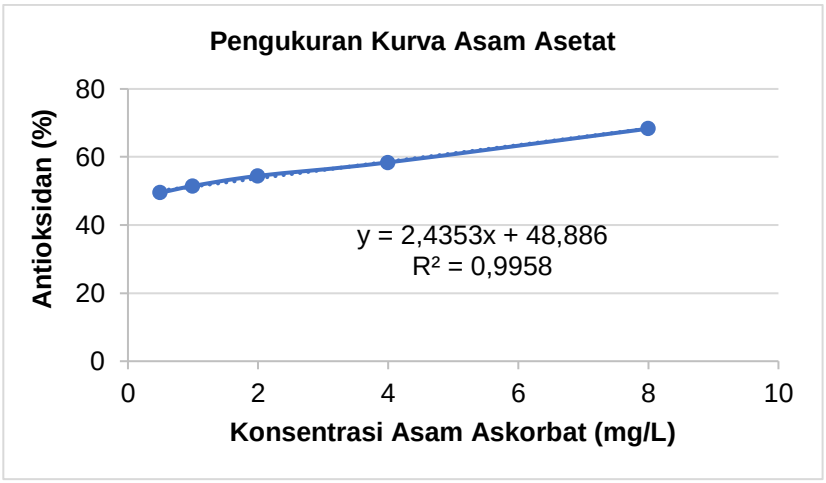
Perhitungan Nilai IC_{50}

$y = 0{,}0723x + 6{,}5283$

$$IC_{50} = \frac{50 - 6{,}5283}{0{,}0723} = 601{,}27\%$$

b. Pengukuran Asam Askorbat

No.	Konsentrasi (mg/L)	Aktivitas Antioksidan (%)	Nilai IC_{50}
1	0,5	49,50	0,457
2	1	51,49	
3	2	54,46	
4	4	58,42	
5	8	68,32	



Konsentrasi 0,5 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}051)}{0{,}091} \times 100\%$$
$$= 49{,}50\%$$

Konsentrasi 1 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}049)}{0{,}091} \times 100\%$$
$$= 51{,}49\%$$

Konsentrasi 2 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}046)}{0{,}091} \times 100\%$$
$$= 54{,}46\%$$

Konsentrasi 4 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}042)}{0{,}091} \times 100\%$$
$$= 58{,}42\%$$

Konsentrasi 8 mg/L

$$\text{Aktivitas Antioksidan (\%)} = \frac{(0{,}101 - 0{,}032)}{0{,}091} \times 100\%$$
$$= 68{,}32\%$$

Perhitungan Nilai IC_{50}

$y = 2{,}4353x + 48{,}886$

$$IC_{50} = \frac{50 - 48{,}886}{2{,}4353} = 0{,}457\%$$