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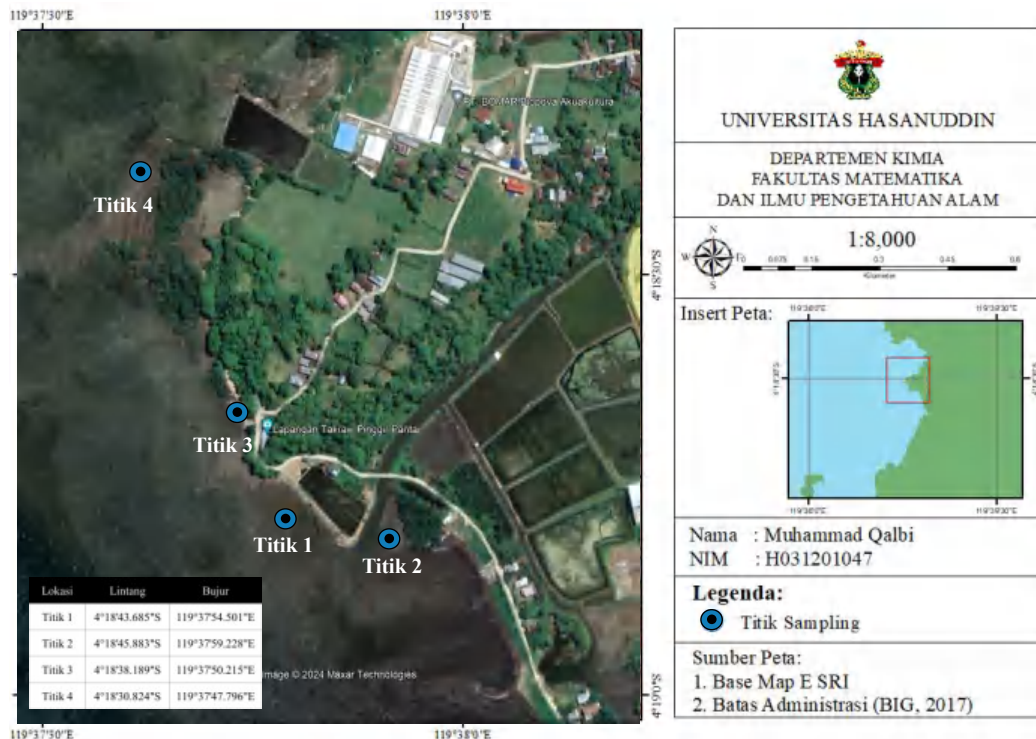
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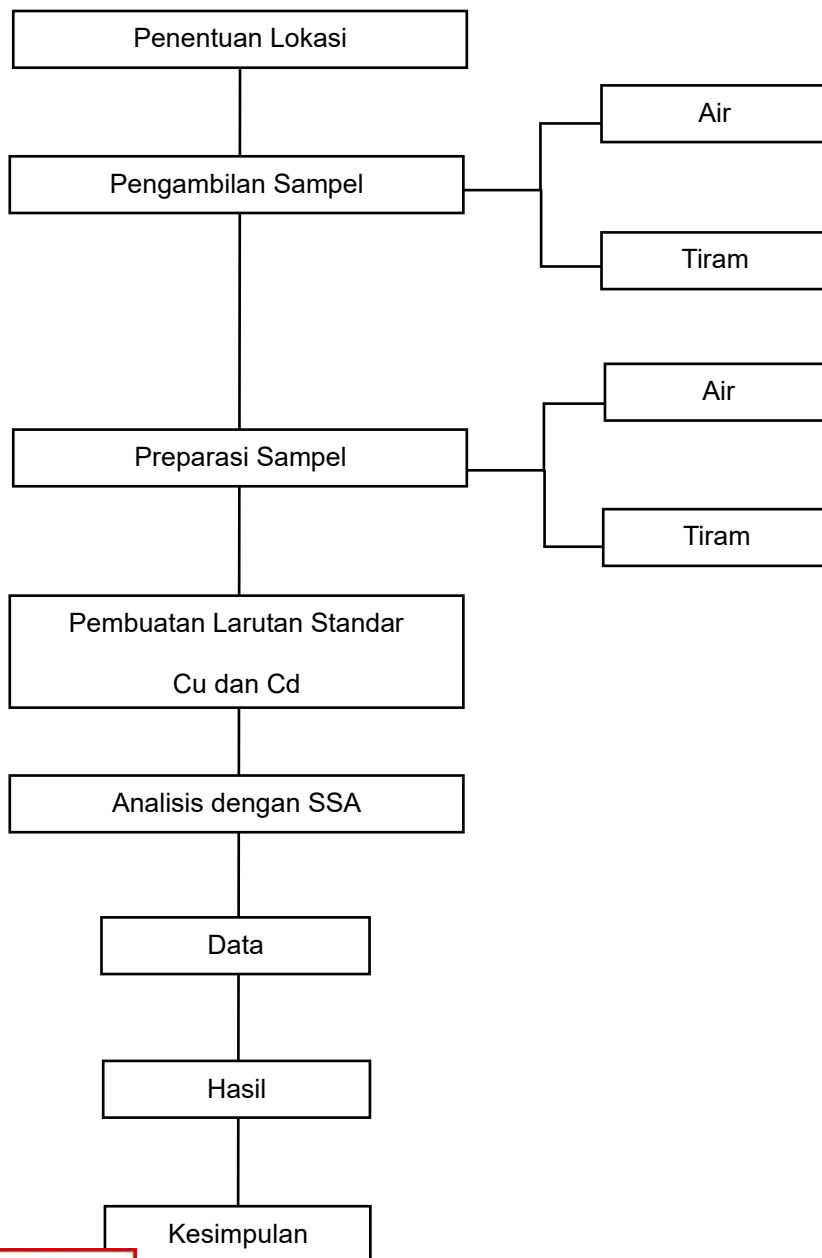


Lampiran 1. Lokasi pengambilan sampel



Keterangan:
 Titik 1 = Bibir Pantai
 Titik 2 = Dekat Muara Sungai
 Titik 3 = Dekat Pemukiman Masyarakat
 Titik 4 = Dekat PLTU Barru

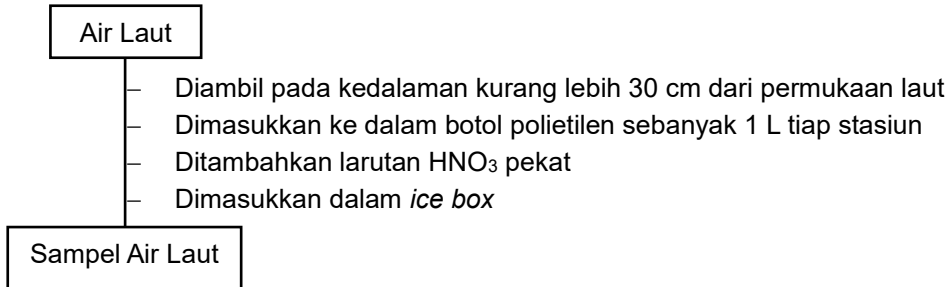


Lampiran 2. Skema kerja penelitian

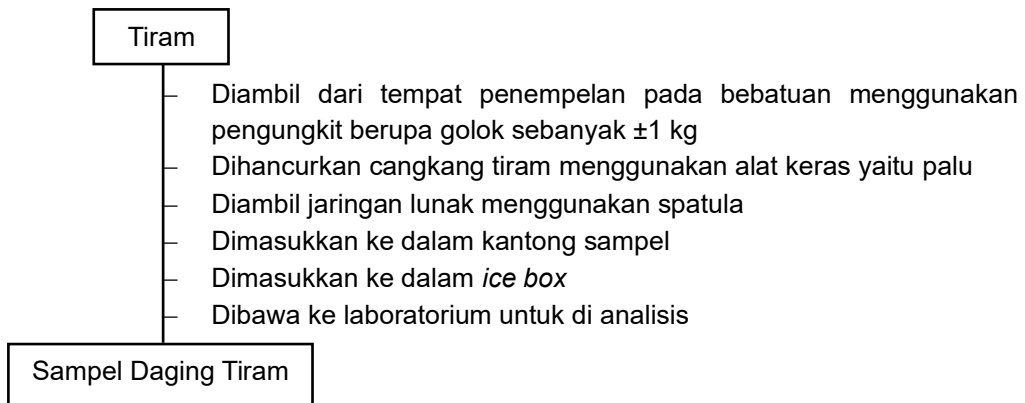
Lampiran 3. Bagan kerja

1. Pengambilan Sampel

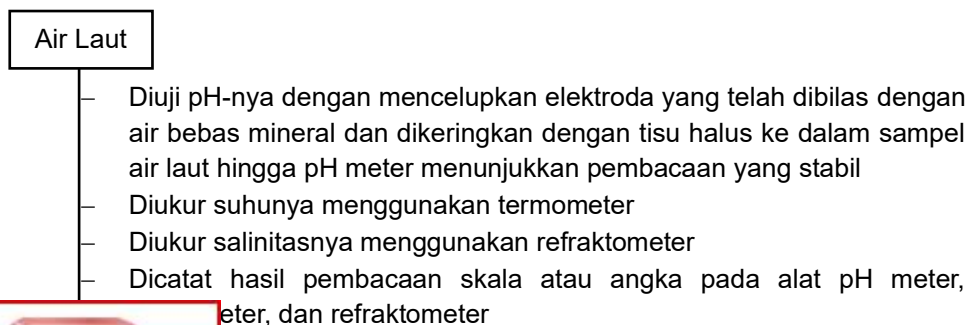
a. Pengambilan Sampel Air Laut (Fernandez dkk., 2023)



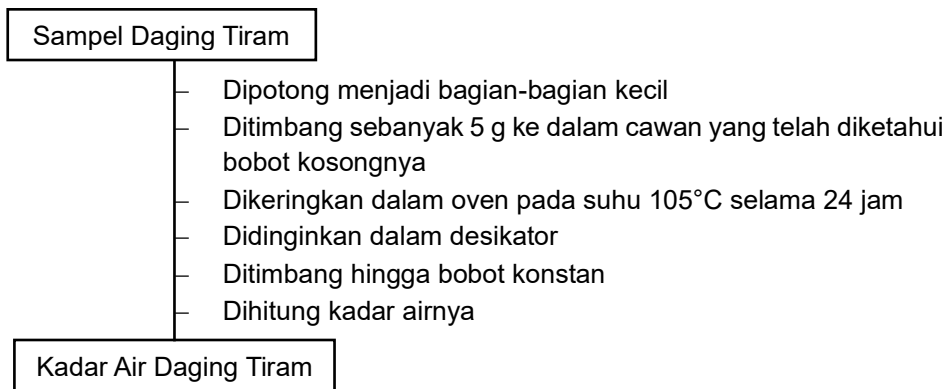
b. Pengambilan Sampel Daging Tiram (Clara dkk., 2021)



c. Pengujian Kualitas Air Laut secara *In Situ* (SNI 6989.11:2019)

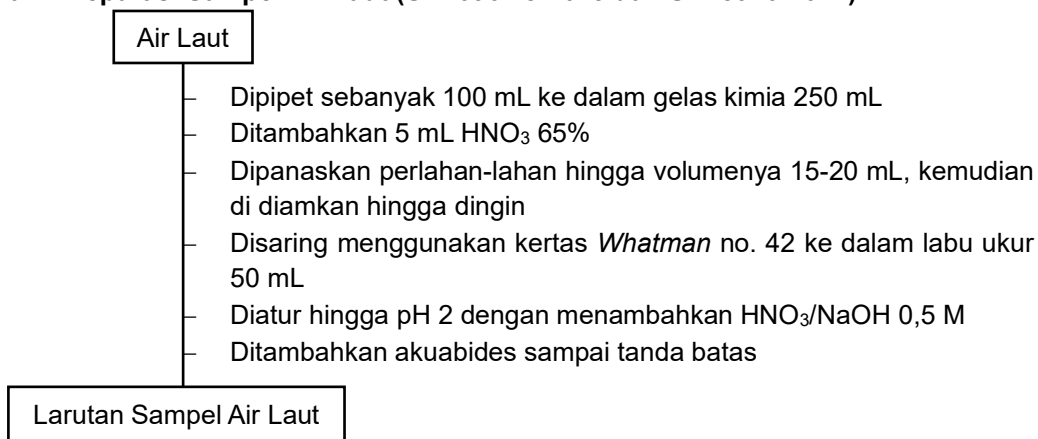


2. Penentuan Kadar Air Daging Tiram (Restiyati, 2023)

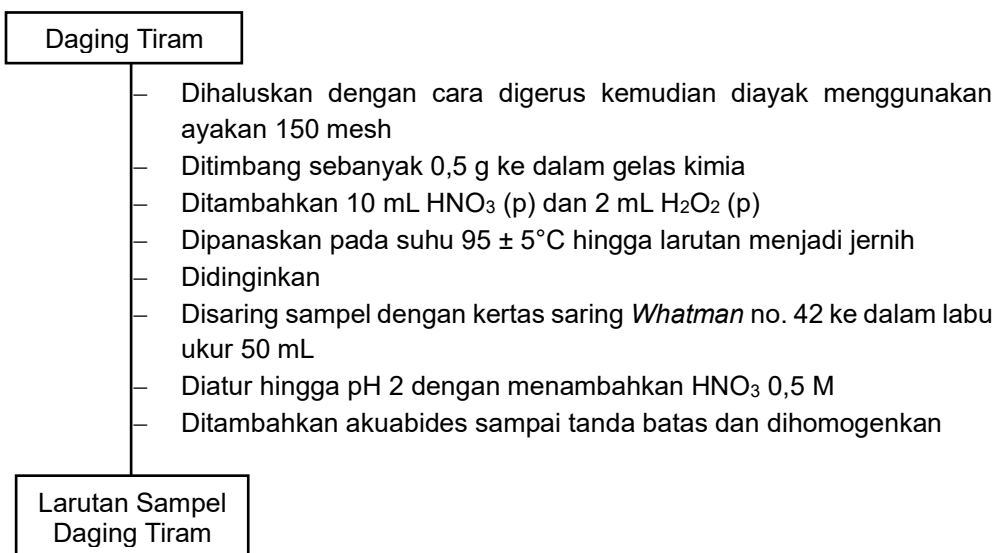


3. Preparasi Sampel

a. Preparasi Sampel Air Laut (SNI 6964.8:2015 dan SNI 8910:2021)

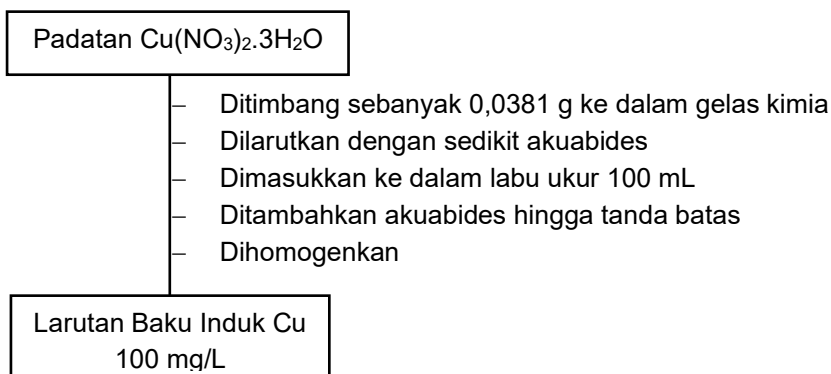


b. Preparasi Sampel Daging Tiram (SNI 2354.13:2014)

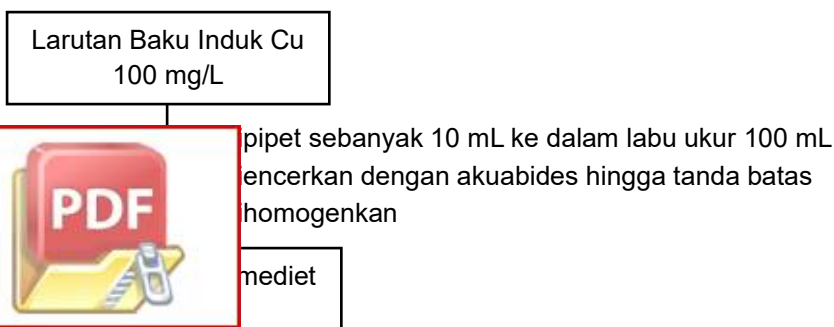


4. Pembuatan Larutan Standar Tembaga (SNI 2354.13:2014)

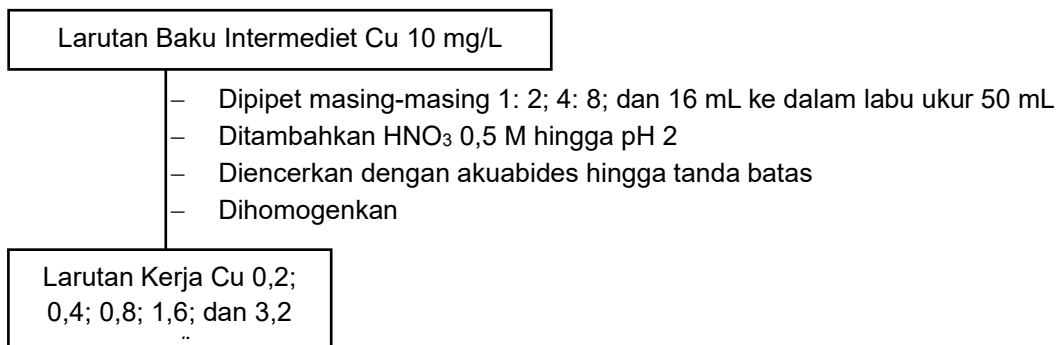
a. Pembuatan Larutan Baku Induk Cu 100 mg/L



b. Pembuatan Larutan Baku Intermediet Cu 10 mg/L

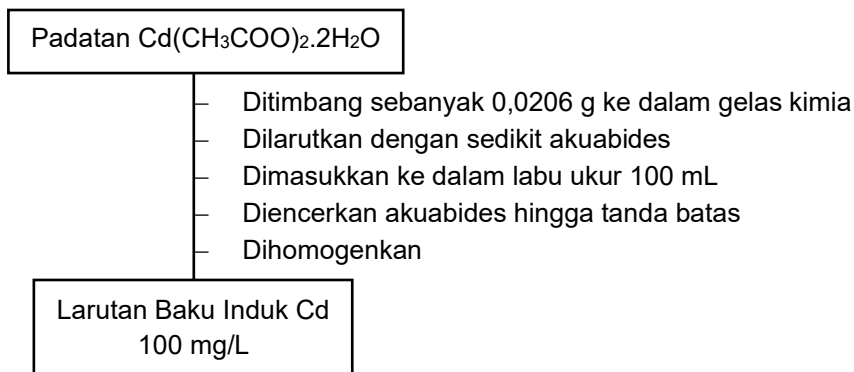


c. Pembuatan Larutan Baku Kerja Cu

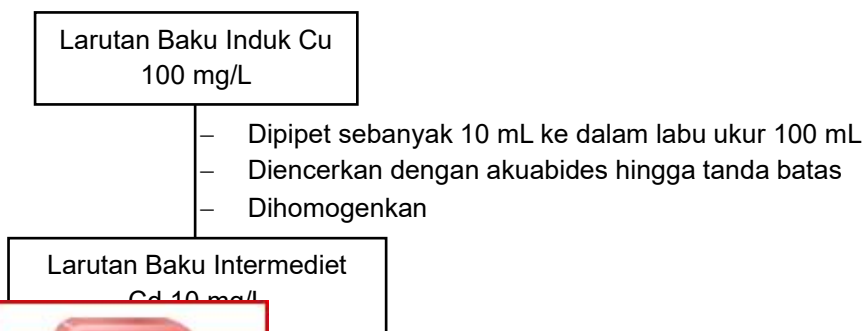


5. Pembuatan Larutan Standar Kadmium (SNI 2354.5:2011)

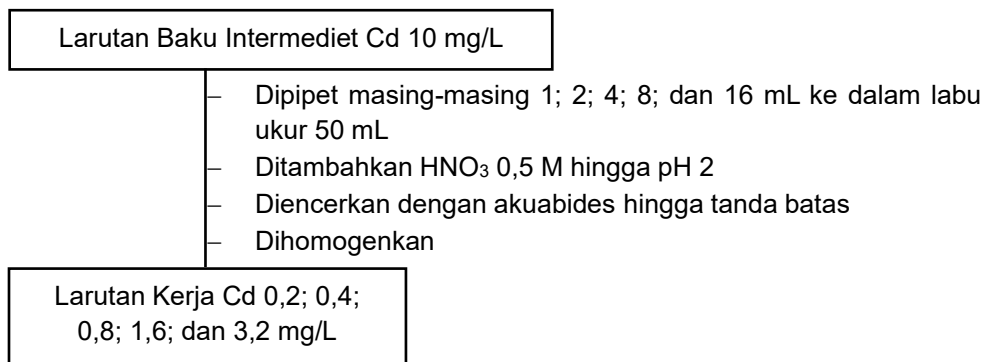
a. Pembuatan Larutan Baku Induk Cd 100 mg/L



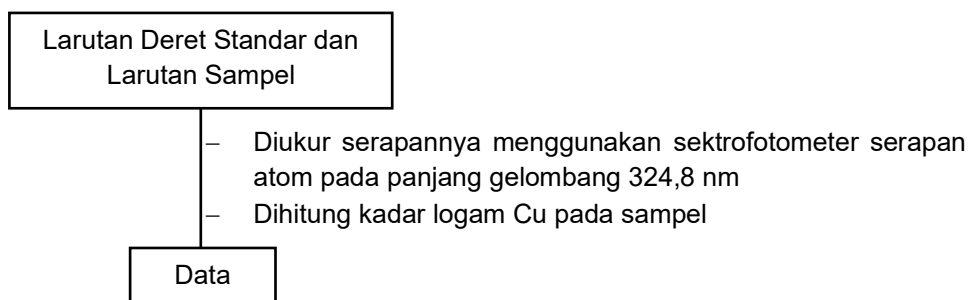
b. Pembuatan Larutan Baku Intermediet Cd 10 mg/L



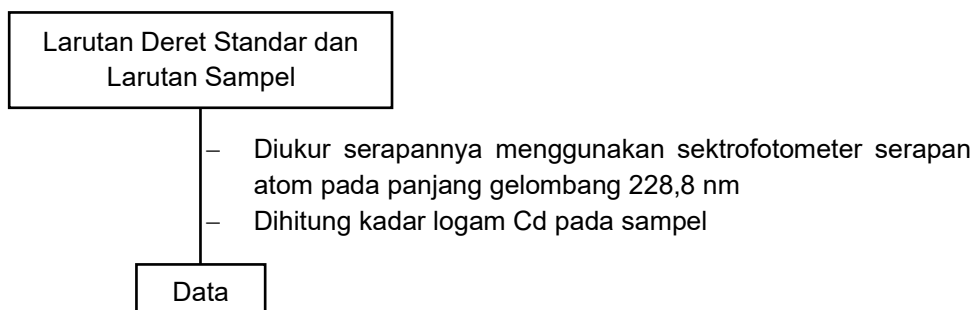
c. Pembuatan Larutan Baku Kerja Cd



6. Analisis Logam Cu pada Sampel Tiram dan Air Laut (SNI2354.14:2014)



7. Analisis Logam Cd pada Sampel Tiram dan Air Laut (SNI 2354.5:2011)



Lampiran 4. Perhitungan pembuatan larutan baku

1. Perhitungan Pembuatan Larutan Baku Cu

a. Pembuatan Larutan Baku Induk Cu 100 mg/L

$$\begin{aligned} \text{mg/L} &= \frac{\text{Ar Cu}}{\text{Mr Cu(NO}_3)_2 \cdot 3\text{H}_2\text{O}} \times \frac{\text{Mg}}{\text{L}} \\ 100 \text{ mg/L} &= \frac{63,5 \text{ g/mol}}{241,6 \text{ g/mol}} \times \frac{\text{Mg}}{0,1 \text{ L}} \\ \text{mg} &= 38,047 \text{ mg} \\ &= 0,0381 \text{ g} \end{aligned}$$

b. Pembuatan Larutan Baku Intermediet Cu 10 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ mg/L} &= 100 \text{ mL} \times 10 \text{ mg/L} \\ V_1 &= 10 \text{ mL} \end{aligned}$$

c. Pembuatan Larutan Baku Kerja Cu

- Konsentrasi 0,2 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,2 \text{ mg/L} \\ V_1 &= 1 \text{ mL} \end{aligned}$$
- Konsentrasi 0,4 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,4 \text{ mg/L} \\ V_1 &= 2 \text{ mL} \end{aligned}$$
- Konsentrasi 0,8 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,8 \text{ mg/L} \\ V_1 &= 4 \text{ mL} \end{aligned}$$
- Konsentrasi 0,8 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 1,6 \text{ mg/L} \\ V_1 &= 8 \text{ mL} \end{aligned}$$
- Konsentrasi 3,2 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 3,2 \text{ mg/L} \\ V_1 &= 16 \text{ mL} \end{aligned}$$



Pembuatan Larutan Baku Cd Larutan Baku Induk Cd 100 mg/L

$$\begin{aligned} &= \frac{\text{Ar Cd}}{\text{Mr (CH}_3\text{COO)}_2 \cdot 2\text{H}_2\text{O}} \times \frac{\text{Mg}}{\text{L}} \\ &= \frac{\text{g/mol}}{\text{g/mol}} \times \frac{\text{Mg}}{0,1 \text{ L}} \end{aligned}$$

$$\begin{aligned} \text{mg} &= 20,5804 \text{ mg} \\ &= 0,0206 \text{ g} \end{aligned}$$

b. Pembuatan Larutan Baku Intermediet Cd 10 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 100 \text{ mg/L} &= 100 \text{ mL} \times 10 \text{ mg/L} \\ V_1 &= 10 \text{ mL} \end{aligned}$$

c. Pembuatan Larutan Baku Kerja Cd

- Konsentrasi 0,2 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,2 \text{ mg/L} \\ V_1 &= 1 \text{ mL} \end{aligned}$$

- Konsentrasi 0,4 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,4 \text{ mg/L} \\ V_1 &= 2 \text{ mL} \end{aligned}$$

- Konsentrasi 0,8 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 0,8 \text{ mg/L} \\ V_1 &= 4 \text{ mL} \end{aligned}$$

- Konsentrasi 1,6 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 1,6 \text{ mg/L} \\ V_1 &= 8 \text{ mL} \end{aligned}$$

- Konsentrasi 3,2 mg/L

$$\begin{aligned} V_1 \times C_1 &= V_2 \times C_2 \\ V_1 \times 10 \text{ mg/L} &= 50 \text{ mL} \times 3,2 \text{ mg/L} \\ V_1 &= 16 \text{ mL} \end{aligned}$$



Lampiran 5. Perhitungan konsentrasi logam

A. Perhitungan Konsentrasi Logam Cd dalam daging Tiram (*Saccostrea echinata*) dan Air Laut

$$\text{Kadar (mg/kg)} = \frac{C \times V}{W}$$

Keterangan:

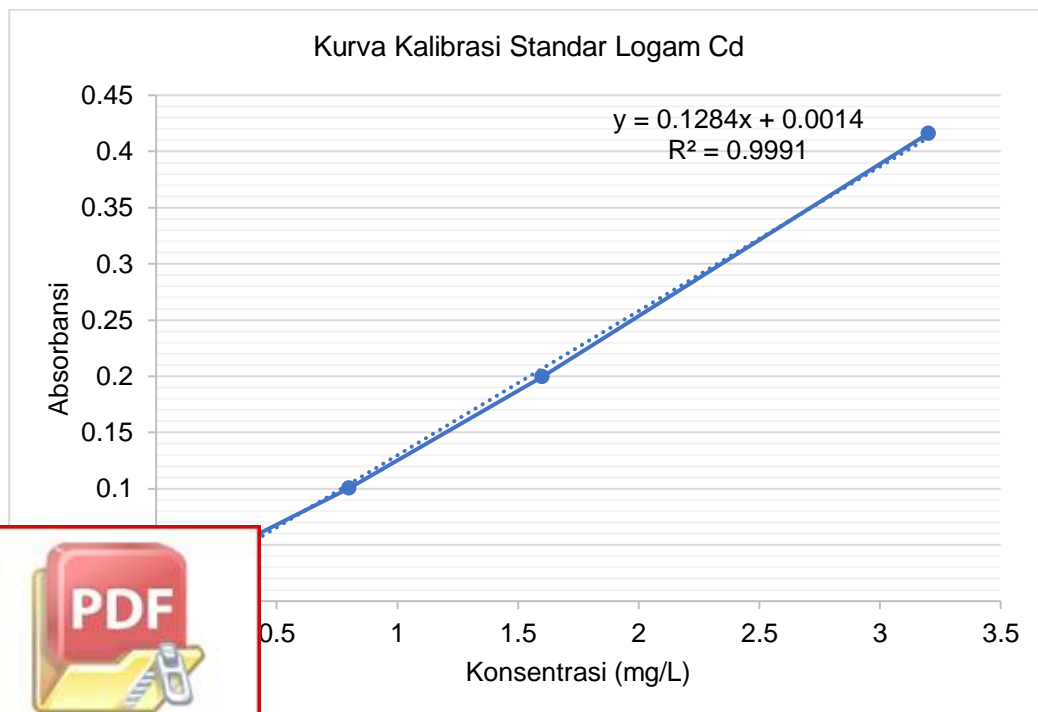
C = Konsentrasi larutan sampel

V = volume larutan sampel

W = berat sampel

1. Hasil pengukuran larutan standar logam Cd

No.	Konsentrasi (mg/L)	Absorbansi
1.	0,0	0,000741
2.	0,2	0,030254
3.	0,4	0,057372
4.	0,8	0,100485
5.	1,6	0,199588
6.	3,2	0,415986



2. Data Penimbangan Daging Tiram (*Saccostrea echinata*)

Data penimbangan daging tiram

Lokasi Pengambilan Sampel		Gelas Kimia Kosong (g)	Gelas Kimia + daging tiram (g)	Bobot daging tiram (g)
Titik 1	Simplo	62,2502	62,7509	0,5007
	Duplo	62,2869	62,7884	0,5015
Titik 2	Simplo	62,2002	62,7011	0,5009
	Duplo	63,5982	64,0992	0,5010
Titik 3	Simplo	61,1564	61,6570	0,5006
	Duplo	62,7751	63,2755	0,5005
Titik 4	Simplo	63,3755	63,8761	0,5006
	Duplo	62,2283	62,7287	0,5004

3. Hasil Pengukuran Konsentrasi Logam Cd dalam Daging Tiram

Hasil pengukuran absorbansi logam Cd pada sampel daging tiram

Lokasi Pengambilan	Absorbansi	
	Simplo	Duplo
Titik I	0,0031	0,0058
Titik II	0,0041	0,0049
Titik III	0,0025	0,0064
Titik IV	0,0045	0,0052

4. Hasil Pengukuran Konsentrasi Logam Cd dalam Air Laut

Hasil pengukuran absorbansi logam Cd pada sampel air laut

Lokasi Pengambilan	Absorbansi	
	Simplo	Duplo
Titik I	0,0382	0,0358
Titik II	0,0408	0,0340
Titik III	0,0274	0,0382
Titik IV	0,0386	0,0400

5. Konsentrasi Logam Cd dalam daging Tiram (*Saccostrea echinata*)

- Titik 1 (Simplo)



$$\begin{aligned}
 &ax + b \\
 &0,1284x + 0,0014 \\
 &0,0031 - 0,0014 \\
 &\hline
 &0,1284 \\
 &0,0132 \text{ mg/L} \\
 &C_x \times V_{\text{flask}} \\
 &\text{Kg sampel}
 \end{aligned}$$

$$C_{Cd} = \frac{0,0132 \text{ mg/L} \times 0,05 \text{ L}}{5,007 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 1,3182 \text{ mg/Kg}$$

- **Titik 1 (Duplo)**

$$y = ax + b$$

$$0,0058 = 0,1284x + 0,0014$$

$$x = \frac{0,0058 - 0,0014}{0,1284}$$

$$x = 0,0343 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{0,0343 \text{ mg/L} \times 0,05 \text{ L}}{5,015 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 3,4197 \text{ mg/Kg}$$

$$C_{\text{Rata-rata Titik 1}} = \frac{1,3182 \text{ mg/Kg} + 3,4197 \text{ mg/Kg}}{2}$$

$$= 2,3689 \text{ mg/Kg}$$

- **Titik 2 (Simplo)**

$$y = ax + b$$

$$0,0041 = 0,1284x + 0,0014$$

$$x = \frac{0,0041 - 0,0014}{0,1284}$$

$$x = 0,0210 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{0,0210 \text{ mg/L} \times 0,05 \text{ L}}{5,009 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 2,0962 \text{ mg/Kg}$$

- **Titik 2 (Duplo)**

$$y = ax + b$$

$$0,0049 = 0,1284x + 0,0014$$

$$x = \frac{0,0049 - 0,0014}{0,1284}$$

$$x = 0,0273 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{0,0273 \text{ mg/L} \times 0,05 \text{ L}}{5,010 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 2,7246 \text{ mg/Kg}$$



$$C_{\text{Rata-rata Titik 2}} = \frac{2,0962 \text{ mg/Kg} + 2,7246 \text{ mg/Kg}}{2}$$

$$= 2,4104 \text{ mg/Kg}$$

- **Titik 3 (Simplo)**

$$y = ax + b$$

$$0,0025 = 0,1284x + 0,0014$$

$$x = \frac{0,0025 - 0,0014}{0,1284}$$

$$x = 0,0086 \text{ mg/L}$$

$$C \text{ Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C \text{ Cd} = \frac{0,0086 \text{ mg/L} \times 0,05 \text{ L}}{5,006 \times 10^{-4} \text{ Kg}}$$

$$C \text{ Cd} = 0,8590 \text{ mg/Kg}$$

- **Titik 3 (Duplo)**

$$y = ax + b$$

$$0,0064 = 0,1284x + 0,0014$$

$$x = \frac{0,0064 - 0,0014}{0,1284}$$

$$x = 0,0273 \text{ mg/L}$$

$$C \text{ Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C \text{ Cd} = \frac{0,0389 \text{ mg/L} \times 0,05 \text{ L}}{5,005 \times 10^{-4} \text{ Kg}}$$

$$C \text{ Cd} = 3,8861 \text{ mg/Kg}$$

$$C_{\text{Rata-rata Titik 3}} = \frac{0,8590 \text{ mg/Kg} + 3,8861 \text{ mg/Kg}}{2}$$

$$= 2,3725 \text{ mg/Kg}$$

- **Titik 4 (Simplo)**

$$y = ax + b$$

$$0,0045 = 0,1284x + 0,0014$$

$$x = \frac{0,0045 - 0,0014}{0,1284}$$

$$x = 0,0241 \text{ mg/L}$$

$$C \text{ Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C \text{ Cd} = \frac{0,0241 \text{ mg/L} \times 0,05 \text{ L}}{5,006 \times 10^{-4} \text{ Kg}}$$

$$2,4071 \text{ mg/Kg}$$



- **Titik 4 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0052 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0052 - 0,0014}{0,1284} \\
 x &= 0,0296 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}} \\
 C_{Cd} &= \frac{0,0296 \text{ mg/L} \times 0,05 \text{ L}}{5,004 \times 10^{-4} \text{ Kg}} \\
 C_{Cd} &= 2,2957 \text{ mg/Kg} \\
 C_{\text{Rata-rata Titik 4}} &= \frac{2,4071 \text{ mg/Kg} + 2,2957 \text{ mg/Kg}}{2} \\
 &= 2,68235 \text{ mg/Kg}
 \end{aligned}$$

6. Konsentrasi Logam Cd dalam Air Laut

- **Titik 1 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0382 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0382 - 0,0014}{0,1284} \\
 x &= 0,2866 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,0241 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,1433 \text{ mg/L}
 \end{aligned}$$

- **Titik 1 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0358 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0358 - 0,0014}{0,1284} \\
 x &= 0,2679 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{V \text{ sampel}} \\
 &= \frac{0,02679 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 &= 0,13396 \text{ mg/L} \\
 &= \frac{0,1433 \text{ mg/L} + 0,13396 \text{ mg/L}}{2} \\
 &= 0,1386 \text{ mg/L}
 \end{aligned}$$



- **Titik 2 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0408 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0408 - 0,0014}{0,1284} \\
 x &= 0,3068 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,3068 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,1534 \text{ mg/L}
 \end{aligned}$$

- **Titik 2 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0340 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0340 - 0,0014}{0,1284} \\
 x &= 0,2539 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,2539 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,1270 \text{ mg/L} \\
 C_{Rata-rata \text{ Titik 2}} &= \frac{0,1534 \text{ mg/L} + 0,1270 \text{ mg/L}}{2} \\
 &= 0,1402 \text{ mg/L}
 \end{aligned}$$

- **Titik 3 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0274 &= 0,1284x + 0,0014 \\
 x &= \frac{0,0274 - 0,0014}{0,1284} \\
 x &= 0,2025 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,2025 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 &= 0,1013 \text{ mg/L}
 \end{aligned}$$



$$\begin{aligned}
 &= ax + b \\
 &= 0,1284x + 0,0014 \\
 &= \frac{0,0382 - 0,0014}{0,1284}
 \end{aligned}$$

$$x = 0,2866 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,2866 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,1433 \text{ mg/L}$$

$$C_{\text{Rata-rata Titik 3}} = \frac{0,1013 \text{ mg/L} + 0,1433 \text{ mg/L}}{2}$$

$$= 0,1223 \text{ mg/L}$$

- **Titik 4 (Simplo)**

$$y = ax + b$$

$$0,0386 = 0,1284x + 0,0014$$

$$x = \frac{0,0386 - 0,0014}{0,1284}$$

$$x = 0,2897 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,2897 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,1449 \text{ mg/L}$$

- **Titik 4 (Duplo)**

$$y = ax + b$$

$$0,0400 = 0,1284x + 0,0014$$

$$x = \frac{0,0400 - 0,0014}{0,1284}$$

$$x = 0,3006 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,3006 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,1503 \text{ mg/L}$$

$$C_{\text{Rata-rata Titik 4}} = \frac{0,1449 \text{ mg/L} + 0,1503 \text{ mg/L}}{2}$$

$$= 0,1476 \text{ mg/L}$$



B. Perhitungan Konsentrasi Logam Cu dalam daging Tiram (*Saccostrea echinata*) dan Air Laut

$$\text{Kadar (mg/kg)} = \frac{C \times V}{W}$$

Keterangan:

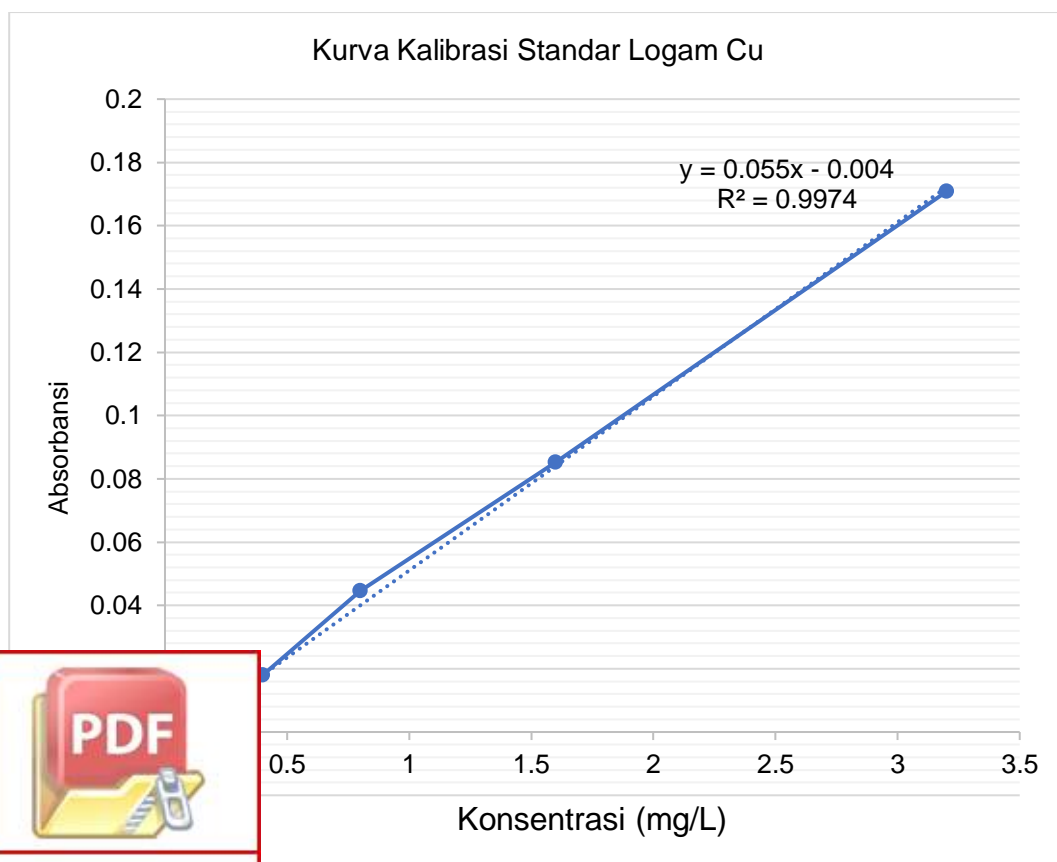
C = Konsentrasi larutan sampel

V = volume larutan sampel

W = berat sampel

1. Hasil pengukuran larutan standar logam Cu

No.	Konsentrasi (mg/L)	Absorbansi
1.	0	-0,002659
2.	0,2	0,011455
3.	0,4	0,017892
4.	0,8	0,044563
5.	1,6	0,085200
6.	3,2	0,170789



2. Data Penimbangan Daging Tiram (*Saccostrea echinata*)

Data penimbangan daging tiram

Lokasi Pengambilan Sampel		Gelas Kimia Kosong (g)	Gelas Kimia + daging tiram (g)	Bobot daging tiram (g)
Titik 1	Simplo	62,2502	62,7509	0,5007
	Duplo	62,2869	62,7884	0,5015
Titik 2	Simplo	62,2002	62,7011	0,5009
	Duplo	63,5982	64,0992	0,5010
Titik 3	Simplo	61,1564	61,6570	0,5006
	Duplo	62,7751	63,2755	0,5005
Titik 4	Simplo	63,3755	63,8761	0,5006
	Duplo	62,2283	62,7287	0,5004

3. Hasil Pengukuran Konsentrasi Logam Cu dalam Daging Tiram

Hasil pengukuran absorbansi logam Cu pada sampel daging tiram

Lokasi Pengambilan	Absorbansi	
	Simplo	Duplo
Titik I	0,0281	0,0274
Titik II	0,0406	0,0376
Titik III	0,0979	0,0372
Titik IV	0,0563	0,0360

4. Hasil Pengukuran Konsentrasi Logam Cu dalam Air Laut

Hasil pengukuran absorbansi logam Cu pada sampel air laut

Lokasi Pengambilan	Absorbansi	
	Simplo	Duplo
Titik I	0,0123	0,0149
Titik II	0,0118	0,0169
Titik III	0,0094	0,0216
Titik IV	0,0188	0,0119

5. Konsentrasi Logam Cu dalam daging Tiram (*Saccostrea echinata*)

- Titik 1 (Simplo)



$$\begin{aligned}
 &ax + b \\
 &0,055x - 0,0004 \\
 &0,0281 + 0,0004 \\
 \hline
 &0,055 \\
 &0,5836 \text{ mg/L}
 \end{aligned}$$

$$C_{Cd} = \frac{C_x \times V_{flask}}{Kg \text{ sampel}}$$

$$C_{Cd} = \frac{0,5836 \text{ mg/L} \times 0,05 \text{ L}}{5,007 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 58,2784 \text{ mg/Kg}$$

- **Titik 1 (Duplo)**

$$y = ax + b$$

$$0,0274 = 0,055x - 0,0004$$

$$x = \frac{0,0274 + 0,0004}{0,055}$$

$$x = 0,5709 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{flask}}{Kg \text{ sampel}}$$

$$C_{Cd} = \frac{0,0343 \text{ mg/L} \times 0,05 \text{ L}}{5,015 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 56,9192 \text{ mg/Kg}$$

$$C_{Rata-rata \text{ Titik 1}} = \frac{58,2784 \text{ mg/Kg} + 56,9192 \text{ mg/Kg}}{2}$$

$$= 57,5988 \text{ mg/Kg}$$

- **Titik 2 (Simplo)**

$$y = ax + b$$

$$0,0406 = 0,055x - 0,0004$$

$$x = \frac{0,0406 + 0,0004}{0,055}$$

$$x = 0,8109 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{flask}}{Kg \text{ sampel}}$$

$$C_{Cd} = \frac{0,8109 \text{ mg/L} \times 0,05 \text{ L}}{5,009 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 80,9443 \text{ mg/Kg}$$

- **Titik 2 (Duplo)**

$$y = ax + b$$

$$0,0376 = 0,055x - 0,0004$$

$$x = \frac{0,0376 + 0,0004}{0,055}$$

$$x = 0,7564 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{flask}}{Kg \text{ sampel}}$$

$$C_{Cd} = \frac{0,7564 \text{ mg/L} \times 0,05 \text{ L}}{5,010 \times 10^{-4} \text{ Kg}}$$



$$C_{Cd} = 75,4890 \text{ mg/Kg}$$

$$C_{\text{Rata-rata Titik 2}} = \frac{80,9443 \text{ mg/Kg} + 75,4890 \text{ mg/Kg}}{2}$$

$$= 78,2167 \text{ mg/Kg}$$

- **Titik 3 (Simplo)**

$$y = ax + b$$

$$0,0979 = 0,055x - 0,0004$$

$$x = \frac{0,0979 + 0,0004}{0,055}$$

$$x = 1,8527 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{1,8527 \text{ mg/L} \times 0,05 \text{ L}}{5,006 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 185,0479 \text{ mg/Kg}$$

- **Titik 3 (Duplo)**

$$y = ax + b$$

$$0,0372 = 0,055x - 0,0004$$

$$x = \frac{0,0372 + 0,0004}{0,055}$$

$$x = 0,7491 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{0,7491 \text{ mg/L} \times 0,05 \text{ L}}{5,004 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 74,8501 \text{ mg/Kg}$$

$$C_{\text{Rata-rata Titik 3}} = \frac{185,0479 \text{ mg/Kg} + 74,8501 \text{ mg/Kg}}{2}$$

$$= 129,949 \text{ mg/Kg}$$

- **Titik 4 (Simplo)**

$$y = ax + b$$

$$0,0563 = 0,055x - 0,0004$$

$$x = \frac{0,0563 + 0,0004}{0,055}$$

$$x = 1,0964 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}}$$

$$C_{Cd} = \frac{1,0964 \text{ mg/L} \times 0,05 \text{ L}}{5,006 \times 10^{-4} \text{ Kg}}$$

$$C_{Cd} = 109,5086 \text{ mg/Kg}$$



- **Titik 4 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0360 &= 0,055x - 0,0004 \\
 x &= \frac{0,0360 + 0,0004}{0,055} \\
 x &= 0,7273 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{\text{Kg sampel}} \\
 C_{Cd} &= \frac{0,7273 \text{ mg/L} \times 0,05 \text{ L}}{5,005 \times 10^{-4} \text{ Kg}} \\
 C_{Cd} &= 72,6573 \text{ mg/Kg} \\
 C_{\text{Rata-rata Titik 4}} &= \frac{109,5086 \text{ mg/Kg} + 72,6573 \text{ mg/Kg}}{2} \\
 &= 91,083 \text{ mg/Kg}
 \end{aligned}$$

6. Konsentrasi Logam Cu dalam Air Laut

- **Titik 1 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0123 &= 0,055x - 0,0004 \\
 x &= \frac{0,0123 + 0,0004}{0,055} \\
 x &= 0,2964 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,2964 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,1482 \text{ mg/L}
 \end{aligned}$$

- **Titik 1 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0149 &= 0,055x - 0,0004 \\
 x &= \frac{0,0149 + 0,0004}{0,055} \\
 x &= 0,3436 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{\text{flask}}}{V \text{ sampel}} \\
 &= \frac{0,3436 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 &= 0,1718 \text{ mg/L} \\
 &= \frac{0,1482 \text{ mg/L} + 0,1718 \text{ mg/L}}{2} \\
 &= 0,16 \text{ mg/L}
 \end{aligned}$$



- **Titik 2 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0118 &= 0,055x - 0,0004 \\
 x &= \frac{0,0118 + 0,0004}{0,055} \\
 x &= 0,2873 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,2873 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,1436 \text{ mg/L}
 \end{aligned}$$

- **Titik 2 (Duplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0169 &= 0,055x - 0,0004 \\
 x &= \frac{0,0169 + 0,0004}{0,055} \\
 x &= 0,38 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,38 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 C_{Cd} &= 0,19 \text{ mg/L} \\
 C_{Rata-rata \text{ Titik 2}} &= \frac{0,1436 \text{ mg/L} + 0,19 \text{ mg/L}}{2} \\
 &= 0,1668 \text{ mg/L}
 \end{aligned}$$

- **Titik 3 (Simplo)**

$$\begin{aligned}
 y &= ax + b \\
 0,0094 &= 0,055x - 0,0004 \\
 x &= \frac{0,0094 + 0,0004}{0,055} \\
 x &= 0,2436 \text{ mg/L} \\
 C_{Cd} &= \frac{C_x \times V_{flask}}{V \text{ sampel}} \\
 C_{Cd} &= \frac{0,2436 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}} \\
 &= 0,1218 \text{ mg/L}
 \end{aligned}$$



$$\begin{aligned}
 &= ax + b \\
 &= 0,055x - 0,0004 \\
 &= \frac{0,0216 + 0,0004}{0,055}
 \end{aligned}$$

$$x = 0,4655 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,4655 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,2327 \text{ mg/L}$$

$$C_{\text{Rata-rata Titik 3}} = \frac{0,1218 \text{ mg/L} + 0,2327 \text{ mg/L}}{2}$$

$$= 0,1773 \text{ mg/L}$$

- **Titik 4 (Simplo)**

$$y = ax + b$$

$$0,0188 = 0,055x - 0,0004$$

$$x = \frac{0,0188 + 0,0004}{0,055}$$

$$x = 0,4145 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,4145 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,2073 \text{ mg/L}$$

- **Titik 4 (Duplo)**

$$y = ax + b$$

$$0,0119 = 0,055x - 0,0004$$

$$x = \frac{0,0119 + 0,0004}{0,055}$$

$$x = 0,2891 \text{ mg/L}$$

$$C_{Cd} = \frac{C_x \times V_{\text{flask}}}{V_{\text{sampel}}}$$

$$C_{Cd} = \frac{0,2891 \text{ mg/L} \times 50 \text{ mL}}{100 \text{ mL}}$$

$$C_{Cd} = 0,1445 \text{ mg/L}$$

$$C_{\text{Rata-rata Titik 4}} = \frac{0,2073 \text{ mg/L} + 0,1445 \text{ mg/L}}{2}$$

$$= 0,1759 \text{ mg/L}$$



C. Perhitungan Kadar Air pada Daging Tiram

$$\text{Kadar Air (\%)} = \frac{W_1 - W_2}{W_1 - W_0} \times 100\%$$

Keterangan:

W_0 = bobot cawan petri kosong (g)

W_1 = bobot cawan petri + sampel sebelum pemanasan (g)

W_2 = bobot cawan petri + sampel setelah pemanasan (g)

Data penimbangan kadar air daging tiram

Lokasi Pengambilan Sampel		Bobot Cawan Petri Kosong (g)	Bobot Cawan Petri + Daging Tiram (sebelum pemanasan) (g)	Bobot Cawan Petri + Daging Tiram (setelah pemanasan) (g)
Titik 1	Simplo	42,7422	47,7486	46,0575
	Duplo	42,6887	47,6893	46,0018
Titik 2	Simplo	42,7580	47,7602	45,9734
	Duplo	42,7638	47,7642	45,9371
Titik 3	Simplo	44,8084	49,8096	48,3199
	Duplo	44,8135	49,8201	48,3181
Titik 4	Simplo	44,7515	49,7523	48,1964
	Duplo	44,7648	49,7662	48,1863

- Titik 1 (Simplo)

$$\begin{aligned} \text{Kadar Air (\%)} &= \frac{W_1 - W_2}{W_1 - W_0} \times 100\% \\ &= \frac{47,7486 - 46,0575}{47,7486 - 42,7422} \times 100\% \\ &= 33,7788\% \end{aligned}$$

- Titik 1 (Duplo)

$$\begin{aligned} \text{Kadar Air (\%)} &= \frac{W_1 - W_2}{W_1 - W_0} \times 100\% \\ &= \frac{47,6893 - 46,0018}{47,6893 - 42,6887} \times 100\% \\ &= 33,7460\% \end{aligned}$$

$$\begin{aligned} \text{Kadar Air Titik 1} &= \frac{33,7788\% - 33,7460\%}{2} \\ &= 33,7642\% \end{aligned}$$

(lo)

$$= \frac{W_1 - W_2}{W_1 - W_0} \times 100\%$$



$$= \frac{47,7602-45,9734}{47,7602-42,7580} \times 100\%$$

$$= 35,7203\%$$

- **Titik 2 (Duplo)**

$$\text{Kadar Air (\%)} = \frac{W_1-W_2}{W_1-W_0} \times 100\%$$

$$= \frac{47,7642-45,9371}{47,7642-42,7638} \times 100\%$$

$$= 36,5391\%$$

$$\text{Rata-rata Kadar Air Titik 2} = \frac{35,7203\%-36,5391\%}{2}$$

$$= 36,1297\%$$

- **Titik 3 (Simplo)**

$$\text{Kadar Air (\%)} = \frac{W_1-W_2}{W_1-W_0} \times 100\%$$

$$= \frac{49,8096-48,3199}{49,8096-42,8084} \times 100\%$$

$$= 29,7869\%$$

- **Titik 3 (Duplo)**

$$\text{Kadar Air (\%)} = \frac{W_1-W_2}{W_1-W_0} \times 100\%$$

$$= \frac{49,8201-48,3181}{49,8201-44,8135} \times 100\%$$

$$= 30,0004\%$$

$$\text{Rata-rata Kadar Air Titik 3} = \frac{29,7869\%-30,0004\%}{2}$$

$$= 29,8937\%$$

- **Titik 4 (Simplo)**

$$\text{Kadar Air (\%)} = \frac{W_1-W_2}{W_1-W_0} \times 100\%$$

$$= \frac{49,7523-48,1964}{49,7523-44,7515} \times 100\%$$

$$= 31,1130\%$$

- **Titik 4 (Duplo)**

$$\text{Kadar Air (\%)} = \frac{W_1-W_2}{W_1-W_0} \times 100\%$$

$$= \frac{49,7662-48,1863}{49,7662-44,7648} \times 100\%$$

$$= 31,5892\%$$

$$\text{Kadar Air Titik 4} = \frac{31,1130\%-31,5892\%}{2}$$

$$= 31,3511\%$$



D. Perhitungan Analisis BCF

$$\text{BCF} = \frac{\text{C organisme}}{\text{C air laut}}$$

C organisme = nilai akumulasi logam berat pada daging tiram

C air laut = nilai akumulasi logam berat pada air laut

1. Nilai BCF logam berat Cd

- Titik I

$$\text{BCF} = \frac{2,3689 \text{ mg/Kg}}{0,1386 \text{ mg/L}} = 17,0916 \text{ L/Kg}$$

- Titik II

$$\text{BCF} = \frac{2,4104 \text{ mg/Kg}}{0,1402 \text{ mg/L}} = 17,1926 \text{ L/Kg}$$

- Titik III

$$\text{BCF} = \frac{2,3725 \text{ mg/Kg}}{0,1223 \text{ mg/L}} = 19,399 \text{ L/Kg}$$

- Titik IV

$$\text{BCF} = \frac{2,6824 \text{ mg/Kg}}{0,1476 \text{ mg/L}} = 18,1734 \text{ L/Kg}$$

2. Nilai BCF logam berat Cu

- Titik I

$$\text{BCF} = \frac{57,5988 \text{ mg/Kg}}{0,16 \text{ mg/L}} = 359,9925 \text{ L/Kg}$$

- Titik II

$$\text{BCF} = \frac{78,2167 \text{ mg/Kg}}{0,1668 \text{ mg/L}} = 468,9251 \text{ L/Kg}$$

- Titik III

$$\text{BCF} = \frac{129,949 \text{ mg/Kg}}{0,1773 \text{ mg/L}} = 732,9329 \text{ L/Kg}$$

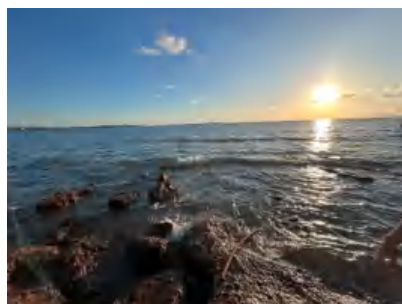
- Titik IV

$$\text{BCF} = \frac{91,083 \text{ mg/Kg}}{0,1759 \text{ mg/L}} = 517,8113 \text{ L/Kg}$$



Lampiran 6. Dokumentasi penelitian

1. Lokasi Pengambilan Sampel



2. Proses Pengambilan Sampel Air Laut



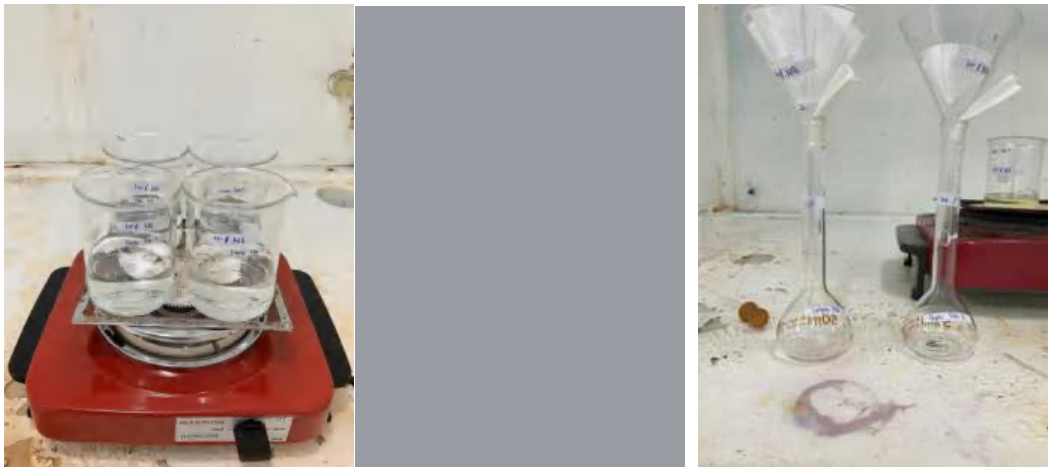
3. Proses Pengambilan Sampel Tiram



4. Pengujian Parameter Lingkungan



5. Destruksi Air Laut



6. Preparasi Daging Tiram



Optimization Software:
www.balesio.com

7. Destruksi Daging Tiram



8. Pembuatan Larutan Standar



9. Analisis Sampel Dengan SSA

