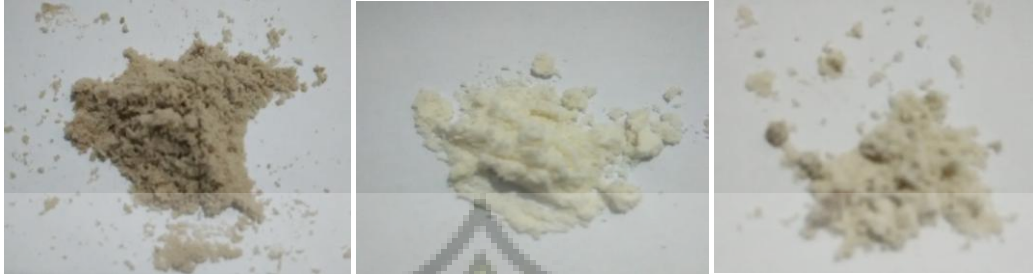


## 7. LAMPIRAN

### 7.1. Foto Isolat Protein Hasil *Freeze drying*



Isolat protein koro benguk    Isolat protein koro pedang    Isolat protein koro glinding

### 7.2. Perhitungan Rendemen Isolat Protein

- Isolat protein koro benguk	
Jumlah tepung	= 20 g
Asumsi kandungan protein dalam tepung	= 23,4%
Jumlah kandungan protein dalam tepung	= g tepung x asumsi protein
	= 20 x 23,4%
	= 4,68 g
Hasil <i>freeze drying</i> I	= 3,607 g
Hasil <i>freeze drying</i> II	= 3,818 g
Rata-rata <i>freeze drying</i>	= 3,7125 g
Rendemen <i>freeze drying</i>	= $\frac{3,7125 \times 100\%}{4,68}$
	= 79,326%
Hasil oven I	= 1,060
Hasil oven II	= 0,699
Rata-rata oven	= 0,8795
Rendemen oven	= $\frac{0,8795 \times 100\%}{4,68}$
	= 18,793%
- Isolat protein koro pedang	
Jumlah tepung	= 20 g
Asumsi kandungan protein dalam tepung	= 27,6%
Jumlah kandungan protein dalam tepung	= g tepung x asumsi protein
	= 20 x 27,6%
	= 5,52 g
Hasil <i>freeze drying</i> I	= 1,003 g
Hasil <i>freeze drying</i> II	= 0,980 g
Rata-rata <i>freeze drying</i>	= 0,9915 g
Rendemen <i>freeze drying</i>	= $\frac{0,9915 \times 100\%}{5,52}$
	= 17,962%
Hasil oven I	= 0,159
Hasil oven II	= 0,164

$$\begin{aligned} \text{Rata-rata oven} &= 0,1615 \\ \text{Rendemen oven} &= \frac{0,1615 \times 100\%}{5,52} \\ &= 2,926\% \end{aligned}$$

- Isolat protein koro glinding
  - Jumlah tepung = 20 g
  - Asumsi kandungan protein dalam tepung = 25%
  - Jumlah kandungan protein dalam tepung = g tepung x asumsi protein
  - = 20 x 25%
  - = 5 g

$$\begin{aligned} \text{Hasil freeze drying I} &= 0,574 \text{ g} \\ \text{Hasil freeze drying II} &= 0,784 \text{ g} \\ \text{Rata-rata freeze drying} &= 0,679 \text{ g} \\ \text{Rendemen freeze drying} &= \frac{0,679 \times 100\%}{5} \\ &= 13,58\% \end{aligned}$$

$$\begin{aligned} \text{Hasil oven I} &= 0,103 \\ \text{Hasil oven II} &= 0,365 \\ \text{Rata-rata oven} &= 0,234 \\ \text{Rendemen oven} &= \frac{0,234 \times 100\%}{5} \\ &= 4,68\% \end{aligned}$$

### 7.3. Perhitungan Kandungan Protein

- Isolat protein koro benguk
  - Ulangan 1: 55,7 ml
  - Ulangan 2: 56,4 ml
  - Ulangan 3: 55,3 ml

$$\%N = \frac{(\text{ml HCl sampel} - \text{blanko})}{\text{berat sampel (mg)}} \times N \text{ HCl} \times 14,008 \times 100$$

$$\%P = \%N \times \text{faktor konversi}$$

$$\%N \text{ ulangan 1} = \frac{(55,7 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 15,6032 \%$$

$$\%P \text{ ulangan 1} = 15,6032 \times 6,25 = 97,52\%$$

$$\%N \text{ ulangan 2} = \frac{(56,4 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 15,8144 \%$$

$$\%P \text{ ulangan 2} = 15,8144 \times 6,25 = 98,84\%$$

$$\%N \text{ ulangan 3} = \frac{(55,3 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 15,485 \%$$

$$\%P \text{ ulangan 3} = 15,485 \times 6,25 = 96,78\%$$

- Isolat protein koro pedang
  - Ulangan 1: 40,5 ml
  - Ulangan 2: 42,1 ml
  - Ulangan 3: 38,9 ml

$$\%N \text{ ulangan 1} = \frac{(40,5 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 11,334 \%$$

$$\%P \text{ ulangan 1} = 11,334 \times 6,25 = 70,90\%$$

$$\%N \text{ ulangan 2} = \frac{(42,1 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 11,79 \%$$

$$\%P \text{ ulangan 2} = 11,79 \times 6,25 = 73,69\%$$

$$\%N \text{ ulangan 3} = \frac{(38,9 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 10,90 \%$$

$$\%P \text{ ulangan 3} = 10,90 \times 6,25 = 68,1\%$$

- Isolat protein koro glinding
  - Ulangan 1: 35,8 ml
  - Ulangan 2: 37,1 ml
  - Ulangan 3: 35,1 ml

$$\%N \text{ ulangan 1} = \frac{(35,8 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 10,03\%$$

$$\%P \text{ ulangan 1} = 10,03 \times 6,25 = 62,66\%$$

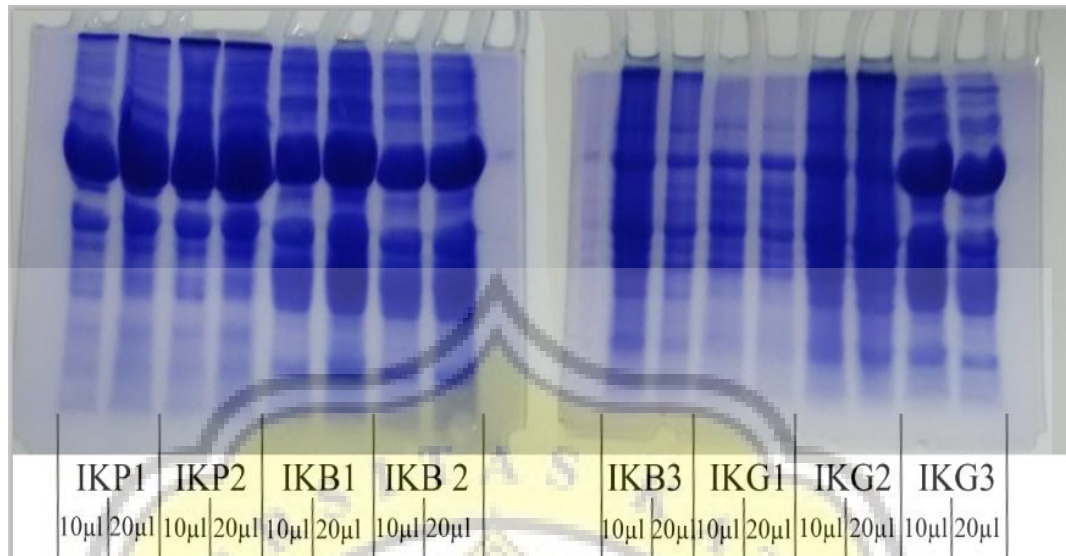
$$\%N \text{ ulangan 2} = \frac{(37,1 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 10,38 \%$$

$$\%P \text{ ulangan 2} = 10,38 \times 6,25 = 64,87\%$$

$$\%N \text{ ulangan 3} = \frac{(35,1 - 0)}{0,5 \times 1000} \times 0,1 \times 14,008 \times 100\% = 9,83 \%$$

$$\%P \text{ ulangan 3} = 9,83 \times 6,25 = 61,48\%$$

#### 7.4. Foto Gel Percobaan Penentuan Konsentrasi Sampel



Keterangan : Isolat koro pedang = IKP  
 Isolat koro benguk = IKB  
 Isolat koro glinding = IKG  
 µl menunjukkan jumlah sampel yang diinjeksi

#### 7.5. Perhitungan Berat Molekul Protein

$$\text{Rumus} = \frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM \text{ protein} - BM_2}$$

Keterangan :  $BM_1$  = Berat molekul marker batas atas  
 $BM_2$  = Berat molekul marker batas bawah  
 $BM_x$  = Berat molekul protein yang dicari

**Pita protein :**

1. Sejajar dengan **210 kDa**
2. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(210 - 125)}{(BM_x - 125)} = \frac{1 \text{ cm}}{0,83 \text{ cm}}$$

$$\frac{85}{(BM_x - 125)} = \frac{1 \text{ cm}}{0,83 \text{ cm}}$$

$$BM_x = \mathbf{195 \text{ kDa}}$$

3. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(125 - 101)}{(BM_x - 101)} = \frac{0,9 \text{ cm}}{0,12 \text{ cm}}$$

$$\frac{24}{(BM_x - 101)} = \frac{0,9 \text{ cm}}{0,12 \text{ cm}}$$

$$BM_x = 104,2 \text{ kDa}$$

4. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(101 - 56,2)}{(BM_x - 56,2)} = \frac{1,1 \text{ cm}}{0,29 \text{ cm}}$$

$$\frac{44,8}{(BM_x - 56,2)} = \frac{1,1 \text{ cm}}{0,29 \text{ cm}}$$

$$BM_x = 68 \text{ kDa}$$

5. Sejajar dengan **56,2 kDa**

6. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(56,2 - 35,8)}{(BM_x - 35,8)} = \frac{1,4 \text{ cm}}{0,3 \text{ cm}}$$

$$\frac{20,4}{(BM_x - 35,8)} = \frac{1,4 \text{ cm}}{0,3 \text{ cm}}$$

$$BM_x = 39,4 \text{ kDa}$$

7. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(35,8 - 29)}{(BM_x - 29)} = \frac{0,6 \text{ cm}}{0,44 \text{ cm}}$$

$$\frac{6,8}{(BM_x - 29)} = \frac{0,6 \text{ cm}}{0,44 \text{ cm}}$$

$$BM_x = \mathbf{34 \text{ kDa}}$$

8. Sejajar dengan **29 kDa**

9. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(29 - 21)}{(BM_x - 21)} = \frac{1,6 \text{ cm}}{0,82 \text{ cm}}$$

$$\frac{8}{(BM_x - 21)} = \frac{1,6 \text{ cm}}{0,82 \text{ cm}}$$

$$BM_x = \mathbf{25,1 \text{ kDa}}$$

10. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(29 - 21)}{(BM_x - 21)} = \frac{1,6 \text{ cm}}{0,2 \text{ cm}}$$

$$\frac{8}{(BM_x - 21)} = \frac{1,6 \text{ cm}}{0,2 \text{ cm}}$$

$$BM_x = \mathbf{22 \text{ kDa}}$$

11. Perhitungan :

$$\frac{(BM_1 - BM_2)}{(BM_x - BM_2)} = \frac{\text{jarak } BM_1 - BM_2}{\text{jarak } BM_x - BM_2}$$

$$\frac{(21 - 6,9)}{(BM_x - 6,9)} = \frac{1,7 \text{ cm}}{0,4 \text{ cm}}$$

$$\frac{14,1}{(BM_x - 6,9)} = \frac{1,7 \text{ cm}}{0,4 \text{ cm}}$$

$$BM_x = \mathbf{10,4 \text{ kDa}}$$